SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1914.

No. 1, Original.

THE STATE OF GEORGIA, COMPLAINANT,

vs.

THE TENNESSEE COPPER COMPANY AND THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED.

TESTIMONY ON MOTION TO ENTER A FINAL DECREE AGAINST THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED.

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a In the Supreme Court of the United States.

No. 1, Original.

THE STATE OF GEORGIA

v.

TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED.

It is agreed between complainant and defendant Ducktown Sulphur, Copper and Iron Company, Limited, that in printing the record for the hearing of the motion of the State of Georgia to enter a final decree against said defendant, the Clerk shall omit the reproduction of all maps and drawings, but said original maps and drawings shall constitute a part of the record, and be considered by the Court as such.

This October 29th, 1914.

WARREN GRICE,
Attorney General of the State of Georgia.
J. A. FOWLER,
Attorney for Ducktown Sulphur, Copper and Iron Company, Ltd.

(Endorsed:) Supreme Court U. S. October Term, 1914. Term No. 1, Original. The State of Georgia vs. Tennessee Copper Company et al. Stipulation as to printing record. Filed November 18, 1914.

1 Supreme Court U. S., October Term, 1914.

Term No. 1, Original.

THE STATE OF GEORGIA, Complainant,

vs.

THE TENNESSEE COPPER COMPANY et al.

Evidence for the Complainant.

Filed September 14, 1914.

2 In the Supreme Court of the United States.

No. 1, Original. In Equity.

THE STATE OF GEORGIA, Plaintiff,
vs.
TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED, Defendants.

Agreement as to Taking of Proof.

It is hereby agreed that, commencing on August the 12th, 1914, and continuing from day to day, if necessary, until completed, the Plaintiff, the State of Georgia, may take the depositions of W. H. Shippen, —— Shippen, —— Vestel, —— Tremmell, John Rodgers, Asberry Henson, S. W. Henson, Geo. W. Henson, J. T. Deweese, R. E. Stalling, W. L. Worshem, and any other witnesses desired by the Plaintiff, at the Court House, in Blue Ridge, Georgia, before E. P. Kingsberry, a Georgia Court Reporter, commencing each day at 9:30 o'clock A. M.

That said depositions may be taken in short hand, transcribed, and when thus done, forwarded and filed. They may be read subject to exceptions for incompetency and ir-eelevancy only; formalities save as above being waived.

This July 8th 1914.

WARREN GRICE, *Att'y Gen.*,
By J. A. DRAKE, *Special Counsel*,
THE DUCKTOWN SULPHUR, COPPER & IRON CO., LD.,
By W. B. MILLER, *Att'y.*

3 No. 1. In Equity.

THE STATE OF GEORGIA,
vs.
THE TENNESSEE COPPER COMPANY & THE DUCKTOWN SULPHUR, COPPER & IRON CO.

It is hereby agreed and stipulated by and between counsel for The State of Georgia and The Ducktown Sulphur, Copper & Iron Company that all of the foregoing testimony taken before the commissioner, shall be, by the commissioner, certified to that he has correctly taken the statements of the various witnesses in shorthand, and has correctly transcribed the same from his notes.

It is further agreed that the testimony shall not be read over to, or signed by the separate witnesses. It is also further agreed that the commissioner may transmit the record of the testimony of the various witnesses, together with the exhibits to the testimony of the several witnesses by express, from Gainesville, Georgia, to the Clerk

of the Supreme Court of the United States, at Washington, D. C. not later than the 10th day of September, 1914.

WARREN GRICE,
J. A. DRAKE,
LAMAR HILL,
Counsel for The State of Georgia.
W. B. MILLER,
J. A. FOWLER,
Counsel for The Ducktown Sulphur, Copper & Iron Company.

4 In the Supreme Court of the United States.

No. 1, Original. In Equity.

THE STATE OF GEORGIA, Plaintiff,
v.
TENNESSEE COPPER COMPANY, and DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED, Defendants.

Depositions of Geo. W. Hedgecock and Others, Taken on Behalf of the Plaintiff, The State of Georgia, Before E. P. Kingsbery, Commissioner, Pursuant to Notice Hereto Annexed, at Blue Ridge, Georgia, Commencing August 12th, 1914, in the Presence of J. A. Drake and Lamar Hill, Representing the State of Georgia, and Gen. J. A. Fowler and Geo. G. Hyatt, Representing the Respondents.

5 The first witness for the State of Georgia, Dr. GEORGE W. HEDGECOCK, having first been duly sworn by the Commissioner, testified as follows:

Direct examination.

By Mr. DRAKE:

Q. 1. Doctor, how old are you and where is your home?
A. Fifty years old, Tacoma Park, Washington, D. C. My citizenship where I vote is in St. Louis, Missouri.
Q. 2. What is your profession?
A. My profession is pathologist, or might properly be called plant pathologist.
Q. 3. What degrees have you taken and in what schools?
A. Bachelor of Science at the University of Nebraska, the degree of Master of Arts in the State University of New York, Degree of Doctor of Philosophy in Washington University in St. Louis.
Q. 4. What special studies have you made, if any, in——
A. Well, my University training was first, what training I took in the University was leading up directly to my present work. I have studied botany from practically all the best authorities, the

philosophy of plants, the sitology of plants, the diseases of plants, as well as systematic botany.

Q. 5. Have you made any study of etimology?

A. I have not finished answering the other question yet, have just begun.

Q. 6. Well, go on.

A. That was my training in the universities proper, I took post graduate work then on diseases of plants, on sitology of plants, leading to the Master's Degree, and at St. Louis, I worked on diseases of plants, especially of wood, which lead to the Doctor's degree, and since then I have been a constant student in my work. I took my degree of,—I didn't give you the dates, do you want them?

Q. 7. No.

6 A. I entered the Government work, this special work I speak of.

Q. 8. What is your present employment and how long have you been in this service?

A. My title is pathologist. I am engaged in the investigation of pathology, in the study of tree diseases, especially at the present time.

Q. 9. Under the United States Government?

A. Yes sir, I am Assistant Chief to the division that I am in.

Q. 10. How long have you been there?

A. I have been in the Government service, in this class of work since 1899, that is, in the study of plant diseases, not in the forest division. In forest diseases I begun my study in St. Louis in the year 1902, but did not put in all my time at it. I continued there until 1907 when I was transferred to Washington, D. C., and entered wholly into the study of diseases of forests.

Q. 11. Since you have been transferred to Washington and into this forest service work,——

A. I am not in the forest service.

Q. 12. Well, in this study of forest diseases, where has that work carried you with respect to smelter injury?

A. Well, in my work I have traveled all over the western part of the United States, and a great deal of the eastern part. I can tell you the smelters that I have visited,—at Douglass, Arizona; the smelters I visited there; at Kennett, California, only one operating at Kennett when I was there; I visited that region, and at Anaconda. I spent three years studying there, 1910, 1911 and 1912; put in time there. In 1912, I visited the region around the smelters at Leadville, Colorado, and examined the trees; and I visited the region around Columbia Falls, Montana.

Q. 13. That has covered a period of how many years?

A. This work I made a specialty of studying smelters has covered a period since 1910. Of course, I visited this place, have not mentioned that, this past year.

Q. 14. Has that experience and work made you familiar

7 with the character of the regions around smelters?

A. It has.

Q. 15. What is the character of the region around smelting plants similar to the one at Ducktown?

A. The copper smelting plants throwing out smelter fumes usually adjacent to the smelters, there is a barren area practically destitute of vegitation. There may be a few plants, of course, here and there, but there is an area practically denuded as compared with other areas. This region depends upon the amount of fumes thrown out, and then beyond this region is a region of what we call acute injury, in which vegetation is not all killed out, where you find trees are injured more or less, dead and dying. During the summer time you will find trees with injured leaves in this region. This region is irregular, depending upon the air currents and contour of the country.

The next region is the one in which the leaves show a yellowing of the green, what we call a chronic condition, greenish yellow instead of healthy color. This is visible to the eye, and we call that the region of chronic injury. That extends out beyond the other regions, then still there is a region of injury which is not visible to the eye. In the first region there is a decided falling off in the growth of the trees, as shown by the rings. In the second there is also a falling off in the growth of the trees as compared with trees growing under healthy conditions. Then beyond that the invisible areas in which it is visible only in the leaf on the trees. You will find there a greater growth than in the other two cases, but in most trees, this falling off is present, if not all, and cuts off the life of the tree, and the only way it can be seen would be to cut into trees and take whole sections of them.

Q. 16. Could you take a small section, a three or four inch section out of a part of the tree, would that give you any idea?

A. No certain idea, because — the tree growing unequal, and if you removed some part of the tree, one side of the tree,—if you
8 let in more light on a tree, it increases the growth on that side. It is necessary to have a whole section to make a certain estimated growth rate of the tree, to offer in evidence.

Q. 17. How far usually does the first zone of injury extend from the smelter?

A. It varies greatly, some of them I have examined, are smaller than others. From the larger ones it goes out a greater distance, in the larger smelters the acute injury may reach twenty two miles on certain species of trees. I would say ten to twenty two miles from the largest smelters, varying down to from six to eleven miles with the smaller ones.

Q. 18. How far in that case would be the outer zone of injury?

A. I have not found it exactly, I have found it a considerable distance, I didn't consider it of enough importance to spend my time on that zone because the injury would be less. I have spent most of my time in the other two zones.

Q. 19. What were they?

A. Acute and Chronic.

Q. 20. Getting down now to this Ducktown Copper Company's plant, when did you first visit that company?

A. Last year, and in the first week of September, 1913.

Q. 21. When have you visited again in this section?

A. I came here last Friday noon, and have been around in the region since.

Q. 22. When did your investigation begin and where did that investigation carry you?

A. I came in northwest over the Louisville & Nashville road to Ducktown. There we took a rig and drove out and walked a good deal of the distance and examined trees on the sides of the road down the Ocoee River and went across down the Ocoee River and went across to a station on the Louisville & Nashville Railroad.

Q. 23. Where else did you go on that trip?

9 A. That was the first part of the trip. We returned to Copperhill and took a horse and buggy, and made three or four trips. One trip around the Isabella section, another trip out southeast into Georgia a distance of five miles, southwest of Copperhill. Another trip northeast to the mountain, rather east, I don't know the name of it.

Q. 24. In Tennessee?

A. Yes sir, toward North Carolina. I took two trips south of Copperhill into Georgia a distance of about four miles.

Q. 25. Do you remember any of the names of the places in Georgia?

A. I did not take the names of any points we went that year I did not expect to testify in smelter cases at all. Simply working to find out the smelter effects and it had no reference to any suit

Q. 26. Well, now, in your investigations this year, last Friday, where did you first come to, and where did those trips carry you, if you made such trips?

A. I took an automobile from this point last Friday noon and drove down from here, Blue Ridge, to Copperhill. Around by the Isabella smelters, looking over the region and selecting some specimens. The second day, Saturday, I took an automobile from here, and went to Epworth, with that gentleman here, J. P. Vestal and his son, who drove the automobile for us. I was accompanied by J. P. Vestal and his son, Mr. Clarke of the Forest Service, and Mr. Johnson of the Forest Service. We went to Medola and Barnes Mountain, and from there to Grannyo Marr Mountain, and at several points we collected specimens and investigated trees and plant injury by sulphur fumes. On the first trip we went south to Ellijay, and then east from there and returned. That was on Monday. On that trip I was accompanied by Mr. Clarke and Mr. Johnson and Mr. F. E. Shippen.

Q. 27. From these various trips, north, south, east and west from these plants, where would you say was the center of this injured zone, where would the center be?

A. It would be near to the Ducktown Copper Company,

10 probably slightly to the south of it. It would be near to it.

Q. 28. What position does the Tennessee Copper Company's smelter occupy as to the zone?

A. As to the zone of barren region and acute injury the Tennes-

see Copper Company lies to the south side, is not in the center, I would say a mile and a half to the south of the center, probably two miles. That is merely an estimate by eye. I have made no survey.

Q. 29. And by traveling over it?

A. Yes sir, and by eye.

Q. 30. Now, what is the condition of those hills and the country generally around the Ducktown plant as to vegetation?

A. In closer you will find, as you go out, you will find as you get away from Ducktown to a distance of a mile the grass begins to grow, and when you get beyond that further, you will find certain other vegetation, confined to Sage grass, and beyond that you will find an increase of trees, the further you go. Of course, these trees and vegetation are injured more or less.

Q. 31. State whether or not there is a gradual increase in vegetation as you go from,——

A. A gradual increase as you go in any direction from the Ducktown smelter.

Q. 32. I believe you stated that you saw these two plants, the Tennessee Copper Company and the Ducktown Copper Company, the appearance and construction of the stacks, did you not?

A. I did. I didn't observe them carefully, but I noticed they had different stacks, one larger than the other, if I remember right.

Q. 33. What would be the relative carrying power of the Ducktown smoke, as to that from the Tennessee Copper Company's stack?

A. In my opinion the Tennessee Copper Company's stack would carry the smoke further than the Ducktown Copper Company.

Q. 34. What effect would the Ducktown smoke have as regards the distance?

11 A. How is that?

Q. 35. As to distance, what effect,——

A. In my opinion, the Tennessee smoke is more apt to go over the mountains to the south, than that of the Ducktown Company.

Q. 36. And the effect of the Ducktown smoke would be observed at what distance, from your observation?

A. It would pass out within a radius of from six to fifteen miles from Ducktown.

Q. 37. What would be the effect of smoke from the Tennessee Copper Company's plant, do you think?

A. It might pass out as far as twenty miles.

Q. 38. Suppose that the winds were blowing from the north and northwest,——

A. I am speaking in terms of injury, not in terms of smoke carrying.

Q. 39. That is what I mean,—Suppose the wind is blowing from the north or northwest, and the smoke is boiling out of the top of the stack of the Ducktown Copper Company's plant, and the wind strikes that smoke and drives it down toward Georgia, and the Tennessee Company's stack we will say is two hundred,—one hundred and ninety feet higher than the point where the smoke comes out of the Ducktown Company's stack would or not those smokes

mingle and mix, that of the Ducktown Company and that of the Tennessee Copper Company, if not, what would be the effect?

A. They would mingle to some extent, but the effect would be this, the smoke coming out of the stack is intensely heated, both of them, 2000 degrees centrigrade, come out hot and would be much lighter than the air, and would be thrown up high, When the wind is not blowing to any extent. That being true, the Tennessee Copper Company's stack being higher, wouldn't cool so quick, take it the distance of the stack to cool that further up. Consequently you would find that one smelter smoke would pass under the other. They would probably be in or near the other.

Q. 40. Which would pass under and which would pass on top?

12 A. The Ducktown Company's smoke would pass below the other on top.

Q. 41. Where would it affect the State of Georgia most?

A. It would strike lower down.

Q. 42. Where would it affect Georgia?

A. The effect would be greater the first few miles, affect it,——

Q. 43. Affect it more or less than the Tennessee Company?

A. It would affect it more on the first slopes.

Q. 44. What distance would that injury carry?

A. From my observations from the smoke columns I have seen I would judge it would carry out six or eight or ten miles, depending on conditions, it might go further.

Q. 45. You went last Saturday, you say, into the region,——

A. I am speaking of damage, not distance it might go, injured that far.

Q. 46. You said you went into Fannin County, Georgia, south of these plants last Saturday, into and around Fighting Town Creek, did you?

A. Yes sir, I didn't recognize it as Fighting Town Creek. I recognized Granny Marr Mountain. I was told Fighting Town Creek was down there.

Q. 47. Did you cross such a creek?

A. I don't know whether I crossed such a creek or not. I didn't pay any attention to that, just the mountains.

Q. 48. How far south do you judge you were from these plants?

A. I could tell if I had a map. (Witness is handed a map.) Which point do you want to know?

Q. 49. The furtherest point you went last Saturday in Georgia, if you can find it?

A. (Pointing to map.) Here is Blue Ridge, here is Copperhill here is Ducktown, I think Mule Top was the furthest, let's see (Looking at map) about ten miles from Ducktown—from Isabella—did you want to know from Copperhill—be about seven and one half miles from Copperhill, is the furtherest point.

13 Q. 50. You say you were at Epworth that day?

A. Yes sir.

Q. 51. To go from Epworth, I will ask you if you didn't take a road leading southwest across,——

A. We went through Medola.

Q. 52. I will ask you if this (Indicating) is Fighting Town Creek, you went from Epworth along that road, and that would carry you across Fighting Town Creek.

A. Yes sir.

Q. 53. Do you remember Higdon Creek?

A. I remember crossing a creek, I don't remember the name.

Q. 54. What mountains did you go on top of?

A. Granny Marr, is further north.

Q. 55. When you was on top of those mountains, could you see the Ducktown Company's plant or not?

A. On Barnes Mountain, from Granny Marr, I could see the Ducktown plant. We had field glasses with us.

Q. 56. Could you see the stack of the plant?

A. Yes sir, could see bare top of the stack of both works from Barnes Mountain, and the smoke belching from it, and from Granny Marr, it showed one side of the works, the angle would be such.

Q. 57. You say you saw the smoke belching from that stack?

A. Yes sir, from both points.

Q. 58. In what quantity did it seem to be?

A. Considerable volume, large volume of smoke being discharged.

Q. 59. That day, which direction was the wind from?

A. At the time I observed it it was blowing toward Tennessee across the mountain of Tennessee.

Q. 60. It was not blowing toward you?

A. No sir.

14 Q. 61. On that trip, did you observe any smoke injury, if so, at what point?

A. On that trip I observed smoke injury near Epworth, and extending at various points along the road from Epworth to Madola and beyond Madola at a number of points between there and Barnes Mountain, and on Barnes Mountain abundant injury, and I took the field glasses and looked at Mule Top and could see many trees browned on the slope of Mule Top Mountain. Returning from there to the Granny Marr Mountain, I saw injury in several places.

Q. 62. Did the injury seem to be recent?

A. In some places it was, and in some places, it had probably occurred two months ago.

Q. 63. Was there much or little injury through that section?

A. Much injury in places, not uniform.

Q. 64. Did you take any samples on that trip?

A. I did.

Q. 65. Do you have them with you?

A. I have. The F. P. 15728 is also called No. 1 in this exhibit. F. P. 15701 is also No. 17. I am about to offer F. P. 15697, which is No. 20 in this exhibit I am about to offer.

Q. 66. Please take those up one at a time and give the numbers and the name of the plant, the injury, what caused the injury, and the location where you got those samples?

A. I would say that these were collected, and have two numbers. The first F. P., is the Government number, and the Government

collection have duplicate specimens of everything under the number. The second number is the number of the specimen which will be the number of the Exhibit itself. That is the number I will use, 1, 2, 3, etc.

Q. 67. Now beging with No. 1 and tell where you found that?

A. No. 1 is an exhibit, or specimen of leaves, what is com-
15 monly known as the black jack oak. It contains smelter injury, the red is due to smelter fumes. There is one or two places on the leaves where there is a slight greenish color, but the red-ening is due to smelter fumes. No fungii on this leaf. I put it under a compound microscope. The specimen is known scientifically as Quercus Marylandica. It was collected on the slope of Barnes Mountain in Fannin County, Georgia, on August 8th, 1914, by me and identified by me.

Exhibit No. 2 was taken the same day and in the same manner. I do not know the common name here, but the scientific name is Quercus Rubra. It is injured by smelter fumes and was taken on Barnes Mountain in Fannin County, Georgia, on August 8th, 1914, and identified by me as Exhibit No. 2.

No. 3 is smelter injury to the leaves of what is known elsewhere and locally as bear, or scrub oak, Quercus Illicifolia. This was gotten along the ridge near the top of Barnes Mountain, collected on August 8th, 1914, and identified by me as Exhibit No. 3.

Smelter injury to the leaves of black oak sprout, Quercus Velutina, found on the slope of Barnes Mountain and collected by me in Fannin County, Georgia, on August 8th, 1914, tendered as Exhibit No. 4. This shows a slight shade darker in color than the preceding. The next is smelter injury to the leaves of the pig nut hickory, Hicoria Glabra, found on the slopes of Barnes Mountain, in Fannin County, Georgia, on August 8th, 1914, collected by me and tendered as Exhibit No. 5.

Leaves of the Scarlet Oak, Quercus Coccines, injured by smelter fumes, collected on the slope of Barnes Mountain, in Fannin County, Georgia, on August 8th, 1914, collected by me and tendered as Exhibit No. 6.

Short leaf pine, Pinus Echinata, injured by smelter fumes found on and near the Barnes Mountain, collected on Barnes Mountain in Fannin County, Georgia, August 8th, 1914, by me, and tendered as Exhibit No. 7.

The leaves of persimmon, Diospyros Virginiana, occasional injury on the leaves, in the region near Barnes Mountain, collected on Barnes Mountain, in Fannin County, Georgia, on August 8th, 1914, tendered by me as Exhibit No. 8. Injured by smelter smoke.

16 Injury by smelter smoke on the leaves of the mountain laurel, Kalmia Latifolia, common on Barnes Mountain and in that vicinity in Fannin County, Georgia, collected on Barnes Mountain on August 8th, 1914, by me and tendered as Exhibit No. 9.

Smelter injury to the leaves of wild honeysuckle, Azalia Nudiflora, very common on Barnes Mountain and vicinity, collected in Fannin County, on Barnes Mountain, on August 8th, 1914, and tendered by me as Exhibit No. 10.

Injury by smelter fumes on the leaves of the chestnut, Castenea Dentata, common expecially shaded trees in and near Granny Marr Mountain, in Fannin County, Georgia, collected on Granny Marr Mountain on August 8th, 1914, by me and tendered as Exhibit No. 11.

Injury by smelter fumes on the leaves of the chestnut, Castenea Dentata, in and near Granny Marr Mountain, Fannin County, Georgia, collected by me on Granny Marr Mountain on August 8th, 1914. This shows the form of injury that occurs in sunlight, which is redder than the form that occurs in the shade. I tender that as Exhibit No. 12.

Injury by smelter fumes on the leaves of the Virginia Creeper, Parthenocissis Quinquefolia, the form that occurs in the shade, on the leaves of this plant on Granny Marr Mountain, collect- on Granny Marr Mountain in Fannin County, Georgia, on August 8th, 1914, and tendered by me as Exhibit No. 13.

Injury by smelter fumes on the wild honeysuckle, Azalia Nudiflora, common on and near Granny Marr Mountain in Fannin County, Georgia, collected by me on Granny Marr Mountain, on August 8th, 1914, and tendered as Exhibit No. 14.

Injury by sulphur fumes on the leaves of the white ash, Fraxinus Americana, the form occurring on shaded leaves on seedling trees. This was collected on Granny Marr Mountain on August 8th, 1914, by me, and tendered as Exhibit No. 15.

17 Injury by smelter fumes to one of the golden rod, Solidago Serotina, species uncertain, this injury is common on Granny Marr Mountain, collected on Granny Marr Mountain, Fannin County, Georgia, by me on August 8th, 1914, and tendered as Exhibit No. 16.

Injury by smelter fumes on the leaves of the short leaf pine, Pinus echinata common on, in and near Granny Marr Mountain. The older leaves have been previously injured and shed off. This accounts for the *the* shortness of the leaves. The leaves having been checked in growth by smelter fumes, collected on Granny Marr Mountain on August 8th, 1914. This injury is common in the vicinity, as well as on the mountain, tendered by me as Exhibit No. 17.

Injury by smelter fumes on the leaves of the sumac. Rhus Copallina, frequent on and in the vicinity of Granny Marr Mountain, collected by me on Granny Marr Mountain, on August 8th, 1914, and tendered as Exhibit No. 18.

Injury by smelter fumes to the leaves of the fox grape, Vitis Labrusca, species uncertain, this is found occasionally or frequently, on Granny Marr Mountain and vicinity, in Fannin County, Georgia, collected on Granny Marr Mountain by me on August 8th, 1914, and filed as Exhibit No. 19.

Injury by smelter fumes on the leaves of the chestnut, Castenea Dentata, common on and near Granny Marr Mountain in Fannin County, Georgia, and collected by me on Granny Marr Mountain on August 8th, 1914, and tendered as Exhibit No. 20.

Smelter injury on the leaves of the chestnut oak, Quercus Prinus, frequent on Granny Marr Mountain and in that vicinity; collected

by me in Fannin county, Georgia, on Granny Marr Mountain on August 8th, 1914, and tendered as Exhibit No. 21.

Injury by smelter fumes to the leaves of the black jack oak, Quercus Marylandica, common on Granny Marr Mountain, and in that vicinity, in Fannin County, Georgia, collected by me on Granny Marr Mountain on August 8th, 1914, and tendered as Exhibit No. 22.

Injury by smelter fumes on the leaves of the sassafras,
18 Sassafras Sassafras, common on and near Granny Marr Mountain in Fannin County, Georgia, and collected by me on August 8th, 1914, on Granny Marr Mountain, and tendered as Exhibit No. 23.

Injury by smelter fumes to the leaves of the scarlet oak, Quercus Coccines, common and near Granny Marr Mountain in Fannin County, Georgia, collected by me *me* on Granny Marr Mountain, on August 8th, 1914, and tendered as Exhibit No. 24.

Injury by smelter fumes on the leaves of the scaley poplar, Liriodendron Tulipifera, common on and near Granny Marr Mountain in Fannin County, Georgia, collected by me on August 8th, 1914, tendered as Exhibit No. 25.

Smelter injury to the leaves of the white oak, Quercus Alba, common on and near Granny Marr Mountain, in Fannin County, Georgia, collected by me on Granny Marr Mountain on August 8th, 1914, tendered as Exhibit No. 26.

The leaves of the red maple, Acer Rubrum, injured by smelter fumes, which are very common along the road from Copperhill, Tennessee, to Blue Ridge, Georgia, near Epworth, Georgia, in Fannin County, collected by me on August 7th, 1914, and tendered as Exhibit No. 21.

Injury by smelter fumes to the leaves of the scarlet oak, Quercus Coccinea, very common near Epworth, Georgia, along the road from Copperhill to Blue Ridge, the wagon road, collected by me near Epworth, Georgia on August 7th, 1914. This shows the form of smelter injury. This has been weathered by the wind, and I tender it as Exhibit No. 28.

Injury by smelter fumes on leaves of the black jack oak, Quercus Marylandica, occurring along the east of Epworth and Copperhill and Blue Ridge wagon road, collected by me near Epworth on August 7th, 1914, and I tender it *was* Exhibit No. 29. This specimen shows some weathering, as the previous one.

Injury by smelter fumes to the leaf of the post oak, Quercus Minor,
very common near Epworth, Fannin County, Georgia, along
19 the Copperhill-Blue Ridge Wagon road, collected by me on August 7th, 1914, tendered as Exhibit No. 30. This specimen also shows weathering, much broken.

Injury by smelter to leaves of the spanish oak, Quercus Digitata, common east of Epworth, Fannin County Georgia, near the Copperhill and Blue Ridge wagon road, collected by me on August 7th, 1914, near Epworth, Georgia, tendered as Exhibit No. 31.

Injury by smelter fumes to the leaves of the blackberry, Rubus, common along the Copperhill and Blue Ridge wagon road, collected by me in the garden of Tom Angle, in Fannin County, Georgia, on

August 7th, 1914, tendered as Exhibit No. 32. It was collected by me.

Slight injury by smelter fumes to the scarlet oak, Quercus Coccinea, collected near the Copperhill and Blue Ridge wagon road on August 7th, 1914, by me, and tendered as Exhibit No. 33.

Injury by sulphur fumes to the leaves of the scarlet oak, Quercus Coccinea, common along the wagon road about one mile west of Madola Georgia, and collected by me on August 7th, 1914, and tendered as Exhibit No. 34.

Injury by sulphur fumes to the leaves of the scrub pine, Pinus Virginiana, common near the wagon road about one mile west of Madola, in Fannin County, Georgia, collected by me on August 8th, 1914, and tendered as Exhibit No. 35.

Injury by smelter fumes on leaves of the short leaf pine, Pinus Echinata, along the wagon road one mile west of Madola, collected by me on August 8th, 1914, and filed as Exhibit No. 36.

Injury by smelter fumes to the leaves of the black jack oak, Quercus Marylandica, old and somewhat weathered, but not broken, common along the road west of Madola, in Fannin County, Georgia, collected in this locality on August 8th, 1914, and tendered as Exhibit No. 37.

Injury by smelter fumes to the leaves of cultivated cowpeas, near Madola in Fannin County, Georgia, collected by me a short distance west of Madola, Georgia, on August 8th, 1914, and tendered as Exhibit No. 38.

Q. 68. What would be the effect of such injury as you have just exhibited and described, and that you saw on that trip, on the vitality and life of a forest?

A. The most severe injury I saw on these trips, on the leaves, they were wholly dead. I found many in that condition, and it would result, if repeated in two years, on the same tree, in the death of the twigs, and if injured three years it would result in the death of the whole tree. On Cowpeas and such plants it is liable to kill the plant in one season. Beans and cowpeas being susceptible to the smoke.

Q. 69. Even one application of such injury as you have exhibited, what would be the effect on a crop of cowpeas?

A. A strong exposure to smelter smoke might injure the crop so bad that it would be worthless for producing anything.

Q. 70. What effect would it have upon the peas?

A. If it is in blossom, it would destroy them, but as it blossoms for some time, it might not affect the whole crop.

Q. 71. Please describe what function the pollen in any plant performs in the life of the plant?

A. They are sexual in effect, have male and female organs, that is the higher plants, such as apple trees, and it is necessary to fertilize the female part so as to produce the seed, and it is necessary that this pollen shall fall upon the tube or stigma and going down from this tube or stigma into the ovary and unites its cell content with what is

known as the egg cell part of the plant. There can be no such formation unless this is done.

Q. 72. What effect would smoke have on the pollen of plants?

A. Smoke fumes, if not greatly diluted, would kill the pollen if it was in contact for any length of time. Much less dilution of smoke will kill pollen than will kill leaves.

Q. 73. How then might you destroy a forest, how many ways?

A. The first and most violent way is to kill off the leaves, thereby destroying the forest. The leaves are the breathing part of
21 the trees as well as its stomach, affects the digestion. If the leaves of the tree are affected that way it weakens the tree so that it would bring about the death of the tree. Then another way, in case the tree was struck at the time it was in blossom, it would affect the bloom or seed of the tree, and in that way kill the reproduction. The third way, would be the repeated application of the smoke until finally the tree would die.

Q. 74. So, if a tree is struck by these fumes, when the bloom or pollen is on, the seed would be destroyed, that would be the effect, would it not?

A. If the pollen was struck, all the pollen open on that day would be killed, but many trees produce pollen from day to day and the entire crop might not be destroyed. Of course, there would be a reduction in the amount.

Q. 75. How does the hemlock reproduce?

A. It produces the same way, by the falling of the pollen upon the female tube.

Q. 75. They reproduce by seed?

A. Yes sir.

Q. 77. What did you observe in your trip through North Georgia on this last year, and this year?

A. Practically no production of seed in the forest where the acute smelter injury was taking place. By acute smelter injury I mean this form just submitted in evidence. I am not keeping,—I am not submitting any chronic specimens in evidence.

Q. 78. I believe you have stated that all the specimens you have exhibited here, are exhibits of injury from smelter fumes, sulphur dioxide fumes?

A. In my judgment they are.

Q. 79. I hand you some exhibits,—What caused that?

A. Exhibit No. F. P. 15017.

Q. 80. Make that Exhibit A, please to your deposition?

A. All right.

22 Q. 81. State whether or not that is the same specimen that was presented to Mr. R. A. Shiflett?

A. Yes sir, the specimen that was, presented to him as F. P. 15017. It is an oak, identified by him as a white oak. If I remember correctly.

Q. 82. Do you know whether or not he stated that was smoke injury?

A. I cannot say as to what he stated.

Q. 83. What is the injury to these leaves, if you know?

A. The injury to this is due to poor circulation. This was collected on the mall near the Agricultural Building in Washington, D. C., on October 10th, 1913, from a limb in which there was poor circulation. This form of death is due to poor circulation.

Q. 84. Is that caused by smoke injury?

A. It is not. It has not the color of smoke injury, darker in color. It has yellow lines along the vein which do not occur in smoke injury. In actual smoke injury, we do not have that. In smoke injury they may turn brown and resemble this to some extent, but it is much more definite.

Q. 85. I tender you Exhibit F. P. 8485, which please file as Exhibit B to your deposition and state whether or not that is the same sample that was presented to Mr. Shiflett a little while ago?

A. This was the sample that was present- to Mr. Shiflett as Exhibit F. P. 8485, it is a specimen of the valley oak, Quercus Bobata.

Q. 86. Where is that specimen from, where was it collected from, and what is the matter with it?

A. This was collected at Kennett, California, in July 1913, by the Secretary of the Farmer's Protective Association and sent to me at Washington, D. C., for determination. I have previously visited this locality and collected injured shrubbery.

Q. 87. Is this smoke injury?

A. Yes, sir, smelter injury, due to smelter fumes. I tender this as Exhibit B.

Q. 88. I tender you F. P. 15029, which please file as Ex-
23 hibit C to your deposition, and state whether or not this sample was presented to Mr. Shiflett a little while ago?

A. This specimen was presented to Mr. Shiflett, F. P. 15029 and a specimen of the black jack oak, Quercus Marylandica, and this specimen has been injured by dry weather. It is so far from the smelters, it could hardly be caused by smelter fumes, collected near Austrell, Tennessee, on the 22nd of September, 1913, by me on the west slope of the mountain near this station.

Q. 89. I present to you F. P. 8740, which please file as Exhibit D to your deposition, and say if this specimen was presented to Mr. Shiflett?

A. This specimen was presented to Mr. Shiflett as F. P. 8740.

Q. 90. Please state what it is and where you collected it?

A. It is a specimen known as Amujha Fruticosa, one of the pulpse family, which might be called the pea family, and it is injured by smelter fumes.

Q. 91. Where did you get it?

A. Collected it along the Ocoee River about five miles west of Ducktown.

Q. 92. Is that plant known as the locust?

A. No sir, it is not a locust.

Q. 93. I will ask you whether or not it was termed by Mr. Shiflett as the black locust in his deposition?

A. If I remember right, he called it a locust, I will not try to remember what he said. I file it as Exhibit D.

Q. 94. I present you F. P. 8724, which I ask you to file as Exhibit E to your deposition and state what that is and what is the matter with it?

A. This specimen presented is F. P. 8724, and is the leaves of the maple, Acer Rubrum, these leaves are primarily injured by sulphur smoke, and have some fall discoloration combined with it.

Q. 95. Where did you say they came from?

24 A. Collected along the Ocoee River about three miles west of Ducktown on the 23rd of September, 1913, by me and I file them as Exhibit E.

Q. 96. I present to you F. P. 15014, which please file as Exhibit F to your deposition, state what it is and where you got it, and what is the matter with it?

A. It is a specimen handed to Mr. Shiflett, F. P. 15014, and is a specimen of the red oak, the leaves of the red oak, Quercus Rubra, it is injured like the previous one, premature fall discoloration is taking place. These were collected on the lower limbs of the red oak along 14th Street west of the Agricultural Building in Washington, D. C., on October 8th, 1913. This differs from smelter smoke from the fact that you have red spots with yellowing all around. Acute injury from smelter smoke, you have a pink-reddish color. There was injury from smelter smoke such as I have submitted.

Q. 97. Would you say the forest through which you passed last Friday and Saturday in Fannin County, Georgia, is in a normal state of health, if not, to what do you attribute its condition?

A. If by normal, you mean good growing condition, I would say no.

Q. 98. That is what I mean, so go on and answer fully.

A. You want to know why, because there is some dead and dying trees in that area,—more dead and dying trees in that area than I would expect to find in ordinary healthy forests in the first place; and in the second place, I found much red discoloration, red discoloration of the oak and pine, which is not found elsewhere outside of the smelter zone.

Q. 99. Taking its proximity to the two smelters of the two companies, what would you attribute that condition to?

A. How is that?

Q. 100. What would you attribute that condition of the forest there to?

A. The effect of smelter fumes.

Q. 101. In that particular locality, from your actual ob-

25 servation of those plants, from those two furnaces, you studied and the view of them through your field glasses, and from the countour of the country and the heights of the stacks, and your knowledge of the actual smoke,—the action of smoke in this country, to which plant would you attribute the damage in that locality?

A. I would attribute the greater part to the Ducktown plant and

a minor part to the Copperhill plant, until you get high up on the mountain, when you get to the top of the mountain it would be hard to say, on the high mountains.

Q. 102. I believe, Doctor, you have already explained why you would draw this conclusion, but if you have not, state why you draw those conclusions?

A. From my observations last year that I made of the smoke columns from the two smelters, I observed the height and direction of the two columns, the direction which they were going, and as to how each struck the hills, and I noticed that the Ducktown column usually struck the hills at a lower altitude than the one from the other plant.

Q. 103. You also could see by actual observation, could you not, that company's stack was lower than the Tennessee Copper Company's stack?

A. Yes sir, it is built lower, very plain to the eye. I didn't make any geometrical measurements of it, but it is lower.

Q. 104. In the distribution or carrying of this smoke, what channels do they usually follow?

A. They usually follow the same channel the air passes through in passing through the mountain ranges.

Q. 105. Would that be uniform or zigzag?

A. It is bound to follow the lower portion between the high peaks. I have known it in the region of Anaconda to travel in a semicircle, travel around the canyon and come out around the point of the mountain in a semicircle.

Q. 106. What is the effect on smoke and gases of this
26 character when it strikes a mountain or hill, what effect does it have?

A. How is that?

Q. 107. What effect on this smoke — coming in contact with mountains have upon it, would it diffuse those smokes?

A. When smoke strikes the earth it diffuses there, take the curvature of the mountains and be diffused to some extent, especially if it is a bright sunshiny day.

Q. 108. Would the striking of a hill entirely diffuse the smoke or would it cause it to change its course and go further on, would it have that effect?

A. I have seen the smoke strike the Big Frog Mountain on the east side and seem to follow the mountain around, going south of it and passing through the lower region. The smoke following around the side of the mountain is not due to the fact that the wind is blowing that direction, changing its course, but due to the suction in the valley beyond.

Q. 109. After reaching its proper altitude in respect to its specific gravity, if it strikes a mountain, it wouldn't have a tendency to rise further and would deflect around the mountain?

A. It wouldn't pass over the mountain unless the wind was blowing right over it. Such things sometimes happen but not frequently. Sometimes you find the smoke rising right up, and in that case the

smoke will go up and pass right over like a storm cloud, that is the way storm clouds form, like warm air in a rain cloud.

Q. 110. Do you know about the effect of these smokes and gases holding together, under different conditions of atmosphere and carrying radious of these smokes under different conditions—what would be the effect under different atmospheric conditions as to the carrying and extent and range of the injury?

A. I am afraid you are getting a little into chemistry, I don't qualify as an expert on chemistry.

27 Q. 111. You have not observed them sufficiently from actual observation?

A. From the visible part of the smoke I can speak, but I cannot speak as to the invisible.

Q. 112. From the visible—what you have seen.

A. Now repeat your question.

Q. 113. How far can visual smoke go without diffusing or becoming invisible?

A. It immediately begins to diffuse, more or less.

Q. 114. How far can you see it?

A. It duffuses some immediately and after it goes out for a distance from the stack, there is more diffusion and the further it goes the more it diffuses.

Q. 115. But would it always be uniform?

A. No.

Q. 116. Do you know—under certain conditions of the atmosphere, wouldn't it carry a long way before it would break up?

A. I have seen it carry twenty five miles, and when it got twenty five miles away, it would strike the mountains and it was very much diffused.

Q. 117. You could see that with the natural eye?

A. That was at Anaconda, Montana.

Q. 118. Will you please describe the effects of these sulphur dioxide fumes, what effect it would have on a crop of growing wheat or any other grain, or corn?

A. On corn, wheat, oats, and grain, occurs what is known as a bleaching process, the leaves whiten.

Q. 119. What would be the effect if smoke fell on it when in blossom?

A. It would kill the pollen that was formed at that time. A wheat crop does not all pollenate the same day. It would simply kill all present at the time and not injure the whole crop.

Q. 120. Would that or not tend to reduce the yield?

A. It would.

28 Q. 121. What about it if it strikes corn in tassel, or shuck?

A. It would injure it as far as the pollen was out, also the silk would blacken, a red color.

Q. 122. Would it or not reduce the yield in corn?

A. It certainly would.

Q. 123. Do you know by actual observation what effect it would have on the ear of corn at gathering time?

A. Well, the ear of corn has a silk running down to each grain.

That silk is a tube for the organ, and the pollen must fall on each silk to get down in the grain and fertilize it to make the corn, and there would be as many of those silks as were killed on that day. It would produce a gap, be lacking that many grains of corn on each ear. The effect would be similar to a drought.

Q. 124. Well, say it didn't entirely kill the silk, the power to fertilize the silk, but should partly kill it, would or not it partly kill it and make the corn yield a smaller amount?

A. In case the corn was injured there would be no grain there.

Q. 125. You mean each individual grain?

A. Yes, sir, simply have an ear with part of the grains there.

Q. 126. What would be the effect on a field of corn after the grain was already fertilized, would it or not have a tendency to make the grain light and chaffy?

A. You would have the effect of a light ear. It would be the same in wheat or oats.

Q. 127. I asked you about the hemlock, didn't I, tell about the hemlock, what is the effect? Is it very susceptible or not susceptible to sulphur dioxide fumes?

A. It is one of the susceptible trees, the most susceptible of the conifers, the hemlock and firs.

Q. 128. What about the locust trees, is it susceptible to smoke injury?

29 A. It is less susceptible than most of the deciduous trees, fairly resistant in the acute zone, I have not studied the lessening of the growth rings in the chronic zone of injury.

Q. 129. Have you been through the forests of Tennessee?

A. I have at several points.

Q. 130. Do you know what is causing the death of chestnut trees in that State?

A. In Eastern Tennessee and Western North Carolina, they have a serious disease, fungu*ous* armillaria mellea, which attacks the roots of the chestnut and injures them, and spreads from tree to tree through the roots. This fungu*ous* gradually kills the root system of the tree and gradually shuts off the circulation, causing the spike top of trees, and finally causes the death of the whole tree. This disease is being studied by William H. Long, of my office. He is the man who is working under me. I have examined with him this disease and knows its effect personally.

Q. 131. Is that what you attribute the death of the chestnut in this country?

A. Yes, sir, I do.

Q. 132. That is,——

By Counsel for Defendant: He didn't state that, he said in that section.

A. I only speak of the sections I know of, I don't know of the other sections.

Q. 133. So it is not a fact that nobody knows what is killing those chestnuts?

A. Not in those localities I have visited.

Q. 134. It is not a fact that the borers are killing them?

A. The borers might work on them, I am not — entomologist.

Q. 135. They are not working in the roots?

A. No, sir. They may work in the bark, but not in the roots, the ones I know of.

Q. 136. I will ask you if it is not possible for one cause to produce the death in Tennessee and entirely another cause to produce
30 death down in North Georgia?

A. Yes, sir, the conditions are very different. It is rarely you ever find conditions in two different states identical.

Q. 137. Now, if there is anything further that I have interrupted you and kept you from explaining, state about it?

A. The only observation I might make was the lack of conifers, I am told by old residents that conifers were once abundant in that section, and now I find very few.

Q. 138. And among that variety is the hemlock?

A. Yes, sir, and pine.

Q. 139. And they are all gone from your observation, are they?

A. There are some pines, but greatly reduced in the acute zone of injury as to what they are outside.

Q. 140. The chestnuts that you found injured up here in Fannin County, Georgia, was it the same injury you found in Tennessee, where you have just described?

A. It is not, I have not found the disease in this section that was found up there.

Q. 141. What is the cause of injury to the chestnut trees in Fannin County, Georgia, that you — last Friday and Saturday?

A. So far as I observed, it has been smelter injury, and been no other.

Cross-examination.

By Mr. FOWLER:

Q. 1. When was it you made your trip out west and examined around the Anaconda furnaces?

A. I made one trip in 1910, the summer of 1910, and the second trip in 1911, and the third trip in 1912.

Q. 2. What is the capacity of those furnaces?

A. I am not a smelter expert.

Q. 3. It is a very large one?

A. I have just read about it in the Hand Book.

Q. 4. It is a large furnace?

A. I don't know anything about it, except the smelter is rated as the largest smelter in the country, that is all I know.

31 Q. 5. Has it a high stack?

A. It has.

Q. 6. Do you know how high the stack is?

A. I don't remember. I think it is higher than the Copperhill stack, I judge by eye.

Q. 7. Do you know whether or not they have any acid plants at all?

A. So far as I know they have nothing at all that could be called an acid plant, they have some kind of process where they take out

some acid. As I said, I don't know, I cannot qualify as a mining expert. I am a pathologist.

Q. 8. What is the first radius of acute injury of that furnace?

A. Ten to twenty miles on certain species of trees.

Q. 9. And that is the largest furnace in the United States?

A. Yes, sir.

Q. 10. Probably in the world, is it not?

A. I don't know, it is rated as the largest.

Q. 11. It does not eliminate any material part of the acid?

A. I don't know anything about it, I have not studied the chemical side.

Q. 12. You have had some understanding about whether it was or not?

By COUNSEL FOR PLAINTIFF: We except to the question as the witness does not know.

Overruled. Appeal prayed and granted.

Q. 13. Did you have some understanding as to what they eliminated?

A. Only from hearsay.

Q. 14. What did you understand about that?

A. I don't remember what that was now.

Q. 15. When you investigate a forest, don't you undertake to determine the cause of the injury?

A. Not the chemistry part of it, I do not work with that.

Q. 16. Did they send a chemist along with you?

A. They sent one there, but he wasn't with me.

Q. 17. Now what other furnaces did you visit in the west?

A. I have visited the region around Kennett, California.

32 Q. 18. What is the extent of those furnaces?

A. I do not know.

Q. 19. Are they large ones?

A. I don't know, I didn't visit the furnaces.

Q. 20. How do they operate with those furnaces?

A. I do not know.

Q. 21. Don't you have any idea?

A. I do not have any definite idea, I didn't visit the furnaces.

Q. 22. Were they larger or smaller?

A. I have already answered you.

Q. 23. Don't you have any conception of whether or not they are of greater capacity?

A. I do not have any definite idea that I wish to swear to.

Q. 24. I don't ask you about what you want to swear to, I asked you if you have any idea about it?

A. I am swearing to what I say, and I want to swear to what I know.

Q. 25. What was the radius around those furnaces?

A. I did not visit in all directions, only went up one valley and back, and right in the immediate vicinity, I went ten miles in one direction and found smelter injury as far as I went. I found it immediately around Kennett and we had another man working there, and I didn't care to take up his problems.

Q. 26. Do you know whether or not they eliminate any acid?
A. I don't know.
Q. 27. Have you ever been in the Ducktown Company's plant?
A. I have never been in the Ducktown Company's plant.
Q. 28. Do you know anything whatever about the process used there?
A. I do not pretend to know about the processes of smelter plants.
Q. 29. Have you ever been in the Tennessee Company's plant?
A. I have never been inside of it.
Q. 30. Do you know anything about the processes used there?
A. Only by hearsay.
Q. 31. I am not asking you to tell if you don't know.
A. I have never been there.
Q. 32. Do you know whether there is one bit of sulphur acid coming out of the plant of the Ducktown Company?
A. I leave that for Dr. ——
33 Q. 33. Do you know?
A. Only what I said from my own standpoint, no, sir. I have never made any analysis.
Q. 34. I want to know if you know as a matter of fact whether there is any,——
A. How could I know?
Q. 35. Please wait until I get through with my question. Do you know whether or not there is any sulphur gas coming out and doing damage from the Ducktown Company?
A. I know you have fumes that smell and look like fumes that are poisonous, that I know to be true.
Q. 36. Where did you ever smell the fumes coming from the Ducktown Company's plant?
A. In the air the first year I was here.
Q. 37. When was that?
A. I couldn't tell you the exact day, but in September.
Q. 38. In 1913?
A. Yes, sir.
Q. 39. Where were you?
A. I don't remember just exactly the location I was in. I got a very good whiff the other day.
Q. 40. Where were you?
A. Around in the vicinity there, close to the plant, not far, a quarter of a mile I should judge.
Q. 41. So you have smelled those fumes about a quarter of a mile away?
A. I should judge so. I know they were very disagreeable in breathing.
Q. 42. You have divided it out, you have divided the injury into zones, you have an acute zone first, that is the nearest zone to the plant.
A. The nearest zone was the barren zone, where practically everything is destroyed.
Q. 43. How far does that zone extend from the Ducktown plant at the present time?

A. It varies in different directions, it is probably three to five miles where there is not much vegetation.

Q. 44. You have seen that at the present time, the barren zone extending three to five miles?

A. It extends from Copperhill to beyond the Ducktown Company's plant and Ducktown, north and south.

Q. 45. You mean there is no vegetation of any consequence at all?

A. It really looks like a desert.

34 Q. 46. When were you there?

A. Friday afternoon.

Q. 47. Didn't you see gardens within two hundred yards of the plant?

A. I saw two or three small gardens at some places.

Q. 48. Didn't you see them right near that plant?

A. I may have.

Q. 49. Did you see anything the matter with them?

A. No, I didn't examine them, I don't remember seeing any gardens, I remember seeing some morning glories in a lawn.

Q. 50. Didn't you see perfectly healthy beans and Irish potatoes and the usual things that grow in gardens within about two hundred yards of the plant?

A. I saw some morning glories.

Q. 51. Are they not one of the easiest plants to be killed by those fumes?

A. They are quite hearty.

Q. 52. You testified a while ago you saw some gardens, now did you or not?

A. I didn't see any gardens, I didn't see any gardens, what I would call regular gardens of vegetables. I may have seen a three by four patch, but didn't notice and have any definite idea of a regular garden with beans, peas and radishes and things of that kind in it.

Q. 53. Will you swear there are not any there?

A. I wasn't looking for them. I wasn't looking for them.

Q. 54. What were you looking for?

A. To see that plant and see how their smoke came out, if you want to know.

Q. 55. You didn't look right around there to see whether vegetables was growing right under it?

A. Yes, sir, I looked to some extent and I saw some corn patches and grass that looked sickly.

Q. 56. Do you swear that all the the grass around that plant looks sickly?

A. I swear there wasn't any grass except in some lawns, where it had been taken care of.

Q. 57. Do you swear that all the grass is destroyed?

A. It has destroyed the original grasses. They have some grass, very sorry, not original grass.

35 Q. 58. Did you see the peach orchards near that plant?

A. I didn't see them, I didn't go all around, I went on the main road.

Q. 59. Will you swear there are no peach orchards?
A. I will not swear, because I wasn't taking observations.
Q. 60. Why didn't you, right around and near the plant?
A. Because I didn't have time.
Q. 61. Why didn't you take time?
A. That is my business and not yours.
Q. 62. Who brought you here?
A. The Secretary of Agriculture sent me here.
Q. 63. Nobody else had anything to do with it?
A. I got my directions from him.
Q. 64. Who from?
A. Mr. Metcalf.
Q. 65. At whose request?
A. The Governor of Georgia wrote the Secretary of Agriculture.
Q. 66. Who influenced the request of the Governor of Georgia—Mr. Shippen?
A. I don't know anything about that.

By COUNSEL FOR PLAINTIFF: We except to that question from the fact that Mr. Shippen didn't have anything to do with it.
Overruled. Appeal prayed and granted.
By COUNSEL FOR DEFENDANT: Mr. Shippen runs this lawsuit, I have seen nobody else running it.

Q. 67. How many times have you been around that furnace?
A. I don't know,—One day the previous year I drove on the wagon road that takes a short cut from Ducktown, I didn't go the main road.
Q. 68. Didn't you know there had been a good deal of evidence introduced in the case in regard to peach orchards?
A. I know nothing of what evidence has been introduced in this case. I didn't come here of my own free will. I will tell you that right now. I was forced to come is the reason why I came here.
Q. 69. You were not told anything about any peach orchards, fine orchards, located right around near the plant?
A. I was not.
36 Q. 70. Didn't you examine the yard, near the furnace, of Capt. Nolde?
A. I didn't get out of the automobile, went through rapidly, I was afraid we were violating the speed law. Pretty near ran over a horse.
Q. 71. What were you doing that for?
A. In a hurry to get back to Blue Ridge so I could get my dinner.
Q. 72. You didn't think you would be able to get anything to eat in Ducktown?
A. It didn't look like it.
Q. 73. As a matter of fact you was — caring about making any examination right around the furnace, as to what was growing there?
A. We went out there in an automobile, and the man had to get back here because he had -nother engagement for the automobile.
Q. 74. The gentlemen conducting this case didn't ask you to make any examination around the furnaces?

A. The gentlemen conducting the case?

Q. 75. Yes, sir.

A. I had not seen the attorneys at that time.

Q. 76. You were taken down and around here in North Georgia to make some examinations, that is true?

A. We went over quite a good deal of territory.

Q. 77. But no one undertook to take you around the furnaces and point out the furnaces and have you make an examination there, did they?

A. No one did, because I was conducting the work myself, and I didn't do it.

Q. 78. Why didn't you?

A. Because I didn't have time. I would have done so, had I the time. I thought it more important to see the smelter injury in Georgia.

Q. 79. Did you try to find out what the Ducktown Copper Company was doing?

A. My instructions were to visit the smelter injury in Georgia. There is injury in Georgia. I*n* didn't need anybody to show me anything about studving the smelter injury right around this defendant in this lawsuit, to see what it is doing.

Q. 80. You didn't regard it as important,——

A. As I understand, it is a Georgia case, and the evidence
37 was to be taken as to what is going on in Georgia, and I studied this country.

Q. 81. You didn't regard it as important to find out who was doing it?

A. I merely followed instructions in that regard, I am in the service of the United States Government.

Q. 82. I don't recall just how far you said that barren zone extended?

A. I don't know exactly, I said north, west and south of Copperhill and beyond Ducktown, three to five miles, I should say.

Q. 83. Does the barren zone extend over into *to* Georgia?

A. Very little. We have trees on this side, to some extent.

Q. 84. Then how *a* far does the acute zone extend?

A. It extends in varrying distances, out in each direction, owing to the way the winds blow. I cannot make an estimate, I have not traveled all over the area.

Q. 85. I wish you would please make an estimate?

A. As to the south, I will only make an estimate?

Q. 86. How far south?

A. The acute injury extends six to ten miles as far as I have made any observation. I didn't go beyond that.

Q. 87. From what point?

A. On some species, I take it you will find it further.

Q. 88. Six to ten miles from what point?

A. Copperhill. I believe I would say that I collected species ten miles from Copperhill except in this direction.

Q. 89. I believe you said something about the furnaces at Copperhill about being in the center of the zone, not in,——

A. Not in the center of the denuded area.

Q. 90. Somewhat to the south?

A. Yes, sir.

Q. 91. Now, as a matter of fact, the furnaces which produce the injury of this kind is never in the center of the zone, is it?

A. Nearly so, ordinarily.

Q. 92. Now, is not that to be determined by the air currents?

38 A. The elipse made along in the direction of the prevailing winds, made along to one side, made longer on one side than the other.

Q. 93. So, if the prevailing winds in this country here is north and east, then naturally the zone would extend in that direction?

A. The zone of injury extends in the direction of the prevailing winds, but I have already said the acute zone of injury was to the north.

Q. 94. I believe you stated this plant was south of the center of the zone?

A. I base my judgment on the map made by Dr. Haywood, made some time ago, as to the region north, and also what I observed on the train as I came through. I noticed it at the second station to the north of Ducktown.

Q. 95. So, as a matter of fact,——

A. I made some observations north to that extent.

Q. 96. So if the Tennessee Copper Company was producing this injury, you would naturally not expect to find that plant in the center of the zone?

A. I would expect to find it near to the point of the elipse, the foci of the elipse, but it is to the south of that.

Q. 97. How do you know it is not?

A. By my eye, I can see it is on the edge of it.

Q. 98. How near to the edge?

A. Within half a mile of the edge.

Q. 99. That is of the acute zone?

A. Of the barren zone, the acute zone I have not measured. I am simply giving that as an opinion.

Q. 100. You were testifying a while ago from a map somebody else had made?

A. I said I saw smelter injury at the second station north of Ducktown, and then I referred to a map Dr. Haywood had made.

Q. 101. Is it not a fact that the figure will always be an exact elipse?

A. It is an irregular one. I have already stated in my evidence that the zones are very irregular.

Q. 102. Then when you ta-ke about the foci of an elipse, that is all guess work.

A. Not exactly, no. You can have a foci of an irregular

39 elipse.

Q. 103. So it is you are going to have the Tennessee Copper Company outside of that place in there, is not that true?

A. No, sir, I am not prejudiced.

Q. 104. I see. Anyway, if the winds, the prevailing winds are from the south, or from the west and southwest, you would naturally find that damage had extended in the opposite direction?

A. I don't know that they are.

Q. 105. I didn't ask you one word about that? I said if that be true.

A. If that be true, I would expect that damage would go in the direction of the prevailing winds.

Q. 106. How much time have you spent in Tennessee and North Georgia?

A. Which trip?

Q. 107. Your whole trips?

A. I don't know.

Q. 108. A month?

A. I presume I have spent over a month. Not much over, have only been here two years.

Q. 109. You have not spent enough time to know of your own knowledge, about the prevailing winds?

A. I have not spent enough time to know the winds or whether. I figure that from weather reports.

Q. 110. You have testified about the smoke from those two companies, how far it would carry, I believe that you testify that the Ducktown Company, the acute zone so far as the Ducktown Company was concerned, would only extend six to fifteen miles—what did you swear about that?

A. I don't remember exactly the distance I said from the Ducktown smelter, I said it would extend along the lower part of the mountains to the south.

Q. 111. You were basing that all together on the supposition,——

A. On observations that I have made.

Q. 112. Will you please wait until I get through with my question. That was based on the supposition that the Ducktown Company was not elevated, was not eliminating any acid from the smoke?

A. No.

Q. 113. What were you basing it on?

A. Observations.

40 Q. 114. What did you see?

A. The acute injury I saw.

Q. 115. Of course, you saw that, but did you see the smoke that did it?

A. Yes sir, I saw the smoke when it came up.

Q. 116. Did you see the smoke which did the injury that you swear about?

A. Nobody does.

Q. 117. Then you didn't see it,

A. No, nobody ever saw the smoke enter into the cell of a leaf.

Q. 118. Then you didn't see the smoke that did that particular injury?

A. I did not, it is not possible to see it.

Q. 119. Then you don't know whether the smoke came from the Ducktown Company's plant or not?

A. I cannot swear that a particular particle of Ducktown Smoke entered into a particular cell and injured it.

Q. 120. If the Ducktown Company was eliminating its acid from the smoke, then it didn't do the injury at all, did it?

A. It is impossible,—I know it is impossible to take all the sulphur out of the smoke.

Q. 121. How do you know?

A. The chemists in Germany have said it.

Q. 122. Are you an expert on chemistry?

A. The plant pathologist,——

Q. 123. Are you qualifying now as an expert chemist?

A. I am qualifying as a man who reads some chemistry.

Q. 124. That is all you know about it? You know absolutely nothing of your own experience and knowledge?

A. I do not.

Q. 125. Yet, you are swearing it is absolutely impossible to take it all out?

A. I swear the Germans say so.

Q. 126. Suppose they take eighty per cent out. Would it be possible for the remainder to do damage from the furnaces?

A. Tell me how many tons are turned out.

Q. 127. I am telling you nothing,——

A. I don't know, unless you do that.

Q. 128. What they are actually doing, you don't know at all.

A. I don't know.

Q. 129. Suppose you take the Ducktown Company's plant entirely away from there, could this damage have been done
41 by the Tennessee Copper Company?

A. Not in my opinion, to the same extent, not closer.

Q. 130. How close was it?

A. Was what?

Q. 131. These damages you are swearing about, you think was done by the Ducktown Copper Company's plant?

A. If you will give me a map, I will tell you.

Q. 132. I thought you conld guess at it?

A. I am not guessing.

Q. 133. Well, then measure it.

O. (Witness looks at map.) What question did you ask me?

Q. 134. How far these plants were that,—I want to know how far those points were that were damaged from the Tennessee furnaces?

A. That east of Epworth, perhaps about three miles.

Q. 135. You mean the points east of Epworth?

A. Yes sir, where I handed in specimens.

Q. 136. You mean from the Tenn ssee Copper Company?

A. Yes sir.

Q. 137. Then it is six miles from the Ducktown Company, is that true?

A. (Measuring on map.) Yes sir, it would be not quite six miles,

a little less, about five and a half or five and six-tenths from Isabella to the point east of Epworth. About two miles east of Blue Ridge, about eight miles from Copperhill.

Q. 138. How far is that from the Ducktown plant?

A. I cannot tell exactly. I couldn't be sure as to the exact distance, but is would be from ten to ten and one half miles to their plant.

Q. 139. From these two points from which you gathered these specimens?

A. Yes sir, a few of them, I gathered from three points. I have already stated that distance from Barnes Mountain. I measured that before, I measured it before, but I don't remember those things after I state them.

Q. 140. Now, were the other points nearer or further than the points at Epworth?

A. The points west of Madola were slightly further, being on Granny Marr Mountain—not much difference from that at Epworth, I could measure it to be exact—the point west of
42 Madoal is about five miles from Copperhill, the Tennessee smelter, and about eight miles from Isabella smelter. Granny Marr Mountain is about seven miles from the Ducktown smelter and five miles from the Tennessee smelters.

Q. 141. So, those points where you gathered these various specimens which you have introduced here are distanced from three to eight miles from Copperhill?

A. You will have to call on the record. I don't remember now. The record will show.

Q. 142. Three to eight miles from Copperhill and from five and a half to eleven miles from Ducktown?

A. Something like that.

Q. 143. Now, Doctor, do you say that the Tennessee plant, that is the plant of the Copperhill company, could not have done that damage?

A. Because the smoke carries too high, ordinarily. I admit that it might drop down nearer and do some damage.

Q. 144. Then you admit it might have done it?

A. It might have done it. I said it wasn't all due to the Ducktown Company.

Q. 145. You mean to testify the fumes coming out of the high stack at Copperhill couldn't produce the damage within three miles of that plant?

A. It could in foggy damp weather, when the fumes come down quickly.

Q. 146. Then there couldn't be any barren zone around the Tennessee smelter at all?

A. Not caused by the Tennessee smelter, there couldn't be.

Q. 147. There couldn't be right around the Ducktown Company because that stack is to- high,—is that true?

A. Not to that extent, because the injury coming out from their other operations.

Q. 148. Don't it come out of their stack?

A. From the usual operations about those furnaces it comes out.

Q. 149. Other noxious gases comes out other thar that which passes through and is converted into acid?

A. If you will go around you will smell them.

Q. 150. Did you ever smell it when it came out, coming from both of them.

A. Those noxious vapors,——

Q. 151. That might be capable of doing injury—those noxious vapors might also come from the Tennessee Company?

43 A. I don't know what is coming out there.

Q. 152. Did you ever pass around the Ducktown Company's plant and smell these noxious vapors; if so, couldn't some of them come from the Tennessee Company's plant?

A. There can be some.

Q. 153. Couldn't those noxious vapors do this damage?

A. They might produce some injury.

Q. 154. Couldn't they produce all of it?

A. I don't know.

Q. 155. Then, Doctor, you do admit you don't know whether the Ducktown Company has done all this damage or not?

A. I don't know whether they have done all or not. I simply gave my opinion for the reason that the Ducktown smoke carries lower than the other, and the damage is due more to that company than from the Copperhill plant, that is the reason.

Q. 156. But you do admit that the Tennessee plant might have done it?

A. The Tennessee plant might have done it—you say?

Q. 157. Yes sir.

A. I don't know, I say I don't know what happens in there if the Ducktown Plant was shut down.

Q. 158. But your whole reason for testifying the Ducktown plant did it, or that you think the Ducktown plant did, is because the Ducktown plant has not as high a stack as the other plant?

A. Because I have seen the smoke columns carrying lower than the other.

Q. 159. Your reason for saying the Tennessee plant does not do the damage and the Ducktown plant does do it, is because the Tennessee Company has a high stack?

A. Only in part.

Q. 160. Then what is the balance?

A. What is the balance—because the other smoke carries lower.

Q. 161. I wish you would tell the time when you saw the Ducktown plant emitting smoke that ever went into the State of Georgia, and those places where you saw the damage?

A. I saw it carrying last year over in the Granny Marr Mountain region, going over in that direction, in the last week

44 of September.

Q. 162. Then you saw it one day?

A. Yes sir, I saw it carrying one day.

Q. 163. In the last week of September?

A. Yes sir.

Q. 164. Wasn't that after you gathered your specimens?

A. I didn't gather any that year. I saw the smoke going southeast into Georgia on the mountain spurs through that region, that year.

Q. 165. When did you see the smoke?

A. One of the days, I don't know which. I took no notes.

Q. 166. When did you gather your specimens?

A. The last week of September.

Q. 167. What became of them?

A. I turned them in at Washington.

Q. 168. How much smoke did you see reach the Granny Marr Mountain region from the Ducktown plant?

A. I had no means of measuring it.

Q. 169. How far were those trees up the mountain from which you gathered those specimens?

A. Which ones?

Q. 170. The ones you have submitted here?

A. They were southeast on the lower hills.

Q. 171. How much higher than the Ducktown plant?

A. I don't know, I never took any elevations.

Q. 172. Were they not about as high as the Tennessee Company's stack or plant,—Were they not higher than that?

A. I don't know, I said.

Q. 173. Did you ever see the smoke going from the Tennessee Company's plant and extending into North Georgia?

A. At the same time I saw the other smoke.

Q. 174. Going to the same place?

A. No sir, not the same place, where the Ducktown smoke was coming northeast, it went over a mile or a mile and a half because the angle was such that it would.

Q. 175. The smoke from the Tennessee Company's stack was somewhat higher?

A. Yes sir, and going further.

Q. 176. And of course, you think it was striking higher upon the mountain—was it striking higher than the stack of the Ducktown furnace?

45 A. Yes sir, certainly, carrying much higher.

Q. 177. The Tennessee furnace was producing a great deal more smoke than the Ducktown furnace?

A. I don't know, you just now heard me say I don't know.

Q. 178. You don't know which one has the greater capacity?

A. I know nothing about the smelter side.

Q 179. You have been around them enough to see which is the larger plant, have you not?

A. You cannot always tell the bore of a gun by the size of the barrel.

Q. 180. Are you comparing the plants over there to the bore of a gun?

A. You might do so.

Q. 181. You saw the smoke going from the Ducktown furnace toward Georgia two times last year?

A. Yes sir, two times.

Q. 182. What was the color of it?

A. A sort of bluish or whitish color.

Q. 183. With a kind of yellow turn, or not?

A. I don't know more than it was the color of blue or whitish smoke.

Q. 184. You say you saw smoke arising from the furnaces last Saturday?

A. I did.

Q. 185. The smoke was traveling northeast?

A. Northwest and west.

Q. 186. That was traveling directly away from Georgia?

A. Traveling over in Tennessee.

Q. 187. You saw the color of that smoke?

A. At a distance it looked whitish. The color of the smoke varies greatly. If the weather is cloudy or sunshiny—sometimes it is darker than other times when the sun shines it looks whitish.

Q. 188. Now, with reference to the effect of smoke on plants, I believe you say if the plant is in bloom it will kill the pollen—that is true?

A. A sufficient amount might.

Q. 189. Didn't you testify the first effect it would have would be to kill the pollen?

A. I said it was more sensitive than other parts of the plants.

46 Q. 190. Of course, when the pollen is killed that plant is barren?

A. Again I state that particular part would be barren, more blooms form successive crops of pollen, so there is a chance for the bloom to fertilize after part of the pollen is killed, but not so in the case of the silk is killed.

Q. 191. How does the peach tree produce peaches?

A. The way I have described it, by fertilization.

Q. 192. Then if the smoke struck a peach tree when in bloom the peach tree will not bear peaches that year?

A. It might bear peaches,—No, I didn't say that. I said it would kill the pollen, and those blossoms that were open. They might have other blossoms open successfully.

Q. 193. How many days does a peach tree bloom?

A. It varies with the variety, some will bloom out fairly quick and others about two weeks.

Q. 194. If you find a splendid peach orchard producing a healthy growth of peaches right near the furnaces, then you would conclude there was no smoke emitted from the furnaces while the trees were in bloom?

A. Not necessarily.

Q. 195. What do you conclude?

A. Peaches sometimes over-bloom, and the smelter might thin them down and have a fair crop after the smelter killed them some of them.

Q. 196. Is not that the exception, about over-blooming?

A. No sir, it is not, very common.
Q. 197. Is it the rule that they over-bloom?
A. In some localities.
Q. 198. How is it there in the Ducktown locality?
A. I have never taken observation.
Q. 199. Why is it you are always trying to inject exceptions into your answers and don't answer according to the general rule?

By COUNSEL FOR PLAINTIFF: We except to that question as irrelevant.

Overruled. Appeal prayed and granted.

A. I refuse to reply.

47 Q. 200. Now, if you know that there — peach trees around in the vicinity of the furnaces which bear fine crops of peaches and do that as regularly as peach orchards anywhere else in the country, is not that an indication to you that there are no damages arising from smoke during the blooming period of the peach trees?
A. I don't know it.
Q. 201. What does it indicate, I am not asking if you know.
A. You asked me if I knew. I don't know.
Q. 202. What is it evidence of?
A. Ask the question again.
Q. 203. (Stenographer repeats question)
A. I don't know it.
Q. 204. I ask you is not that evidence of that fact?
A. I don't know it, unless I know I cannot answer it.
Q. 205. Wouldn't you regard that as an indication, or as evidence that there was no smoke injury during that period?
A. I don't know that I should answer that question the way it is worked, but I will try to give the information you want.
Q. 206. I want an answer to my question.
A. The question is too indefinite, I don't know there is any orchards.
Q. 207. But suppose there are orchards there?
A. I have got to know the other conditions.
Q. 208. Suppose there are orchards in the immediate vicinity of the Ducktown Copper Company, of the company's plant, peach orchards which are bearing peaches right along as abundantly as any other orchards in this whole country is that or not evidence there was no smoke damage there at the time these peaches were in bloom?
A. If there is such an orchard, I don't know that there is,—and it bears peaches, that might be an indication at that time there wasn't enough injury at that time, of course, to kill all the pollen. That is the only way I can answer you.
Q. 209. How do beans reproduce?
A. By fertilizations
Q. 210. Do tomatoes reproduce the same way?
A. They do.

48 Q. 211. How do irish potatoes reproduce?
A. By fertilization, it don't reproduce, it don't reproduce

originally, originally we get them from buboes. Some verieties reproduce by fertilization.

Q. 212. Will the killing of the bloom of irish potatoes — any effect on it?

A. Not on the root crop.

Q. 213. What are the blooms for?

A. They are relices of the past, we don't know exactly what use they are.

Q. 214. Take these various vegetables which grow in gardens and which are reproduced by fertilization, if you find splendid gardens and orchards right around near those furnaces, is not that evidence to your mind those furnaces were not doing injury in that neighborhood?

A. If I found splendid gardens, it would, I have not found them.

Q. 215. I believe you say you didn't look for them?

A. I didn't see them.

Q. 216. I believe you have testified how corn is fertilized and reproduced? Suppose you find good crops of corn around in that neighborhood, is not that an indication to you there is no smoke injury on that corn, or was none on the corn when it was being fertilized?

A. I suppose as I am a botanist, I should answer the question, I have not made any investigations.

Q. 217. I am asking you to answer the question as a scientist.

A. If I found splendid corn fields close to the smelters I would,—If there had been any injury on it, it would not have been a splendid cornfield, if you want to put it that way. But if I had, I would have thought possibly the fumes might be carried over the cornfield. I wouldn't look to see if they hadn't.

Q. 218. You just think the fumes carry over the whole country, don't light at all until they get down into North Georgia?

A. I refuse to answer that question, it is not relevant.

Q. 219. Now, you say you found a good many pine trees ruined, young pine trees?

A. Not many.

49 Q. 220. How were they reproduced?

A. By seed.

Q. 221. How do the seed reproduce?

A. By fertilization.

Q. 222. Didn't you find a good many pine trees bearing seed?

A. Not in the acute injury region.

Q. 223. As a matter of fact, wasn't this sample of pine you brought the only sample of pine you found where there was any injury?

A. No sir, I have not sworn that.

Q. 224. Did you find any pine that was not reproducing seed?

A. I don't remember that I saw any that was?

Q. 225. Did you look to see?

A. I looked at the pines.

Q. 226. Will you testify you examined a single pine that was not reproducing?

A. I will swear I didn't see one that was.

Q. 227. Did you look for that purpose?
A. I did.
Q. 228. Didn't you testify that at first?
A. I wasn't asked.

By COUNSEL FOR PLAINTIFF: We except to that question for the reason the witness has already answered the question in substance.
Overruled. Appeal prayed and granted.

Q. 229. I believe you testify that wheat and oats are reproduced by fertilization?
A. Yes sir.
Q. 230. Rye is produced the same way?
A. Yes sir.
Q. 231. Well, where you find a splendid oat field, a splendid wheat field, don't you know there has been no damage from smoke fumes in that vicinity?
A. As a hypothetical question, yes.—If I should find those, but I have not found them.
Q. 232. If you happened to run across a field that produced 136 bushels of corn to the acre, you would think that a good crop?
A. Yes sir, I would, I have not investigated corn fields, I am not an expert on that subject.
Q. 233. You traveled over a big territory last Friday and Saturday?
A. Yes sir, went about sixty miles.
50 Q. 234. And spent part of Sunday on that trip?
A. No sir, I would have spent Sunday if we had gone out.
Q. 235. Well, on that trip did you examine any crops?
A. I did not.
Q. 236. Did you see any?
A. Not specially, I didn't make any special observations of the crops, more than this blackberry twig.
Q. 237. Was that the only thing you found there was any smoke damage on?
A. The beans were damaged.
Q. 238. Why didn't you bring along a specimen of injured beans?
A. They also had a fungous disease present.
Q. 239. Why didn't you bring them along so we could see that?
A. I am not working on that, that is not my work, the diseases of beans.
Q. 240. You are working, trying to help us see what is the trouble here in Georgia?
A. That is Mr. Orpen's business, he works on bean diseases, he would get angry at me if I did.
Q. 241. Were there any tomatoes in that garden where you examined that blackberry bush?
A. I don't remember seeing any.
Q. 242. Did you see any irish potatoes?
A. No sir.
Q. 243. Had nothing there but beans and blackberry bushes?
A. Probably, but I didn't look very carefully.
Q. 244. Why didn't you examine the whole garden?

A. I wasn't working on it.

Q. 245. Were you trying to find out what these furnaces were doing in North Georgia?

A. Not to that extent. I only had time to work on the tree diseases, as that was not in my line I did not take up any time with it.

Q. 246. So it is there was a garden where you took the specimen from the blackberry bush?

A. I didn't investigate the garden.

Q. 247. Were you authorized to investigate that?

A. I was authorized to investigate the forest in North Georgia.

Q. 248. So you are not going to swear to anything except what the Secretary of Agriculture tells you?

A. Nothing only what I found.

51 Q. 249. If you found something he didn't tell you to swear to, would you testify about that?

A. I might if I found it.

Q. 250. So it is, you didn't examine that garden you were in?

A. I certainly didn't, I didn't have time.

Q. 251. Is a blackberry bush a true?

A. It is a shrub, we work on them.

Q. 252. You were sent here to examine trees?

A. The office of pathologists works on shrubs and trees.

Q. 253. Is that the only garden you saw on the trip?

A. The only one I even looked into.

Q. 254. Did you look into any cornfields on that trip?

A. There were some cornfields, of course, but I didn't pay any attention to them.

Q. 255. You didn't try to see whether or not the corn had been damaged?

A. No, I didn't have time.

Q. 256. Did you see any potato patches?

A. I don't remember seeing any potato patches, I remember hearing several gentlemen say,——

Q. 257. Don't tell anything about that, why are you trying to slip that in?

A. I didn't intend to say that, leave that out.

By COUNSEL FOR PLAINTIFF: We except to the statement of General Fowler that the witness is trying to slip anything in, it was in a way responsive to his question. For that reason the answer was, while not strictly competent, it might be relevant in that sense.

Overruled. Appeal prayed and granted.

Q. 258. Well, you have brought in specimens of about how many different kinds of tree growths?

A. I have not counted them, I don't know.

Q. 259. How many varieties do you suppose you saw on that trip.

A. That were injured?

Q. 250. No, I am not talking about injured, all the kinds you saw?

A. Of trees?

Q. 261. Yes sir.

A. About eight specimens of oak, three specimens of pine, chest-

nut, chinquapin, persimmons, two specimens of hickory, one
52 of poplar, one of maple, and probably,—I don't remember seeing other trees.

Q. 262. Didn't you see a great many varieties of which you brought in no specimens at all?

A. Not that I remember. If you call over their names, I can tell you.

Q. 263. You know the usual plants and trees you see in North Georgia?

A. Yes sir.

Q. 264. Don't you know there are at least forty varieties in North Georgia?

A. I know at least forty species of trees in North Georgia, I don't know they are all here, though.

Q. 265. Don't you know there is at least forty species of trees in this territory?

A. There may be, but not in the zone of acute smelter injury that I investigated.

Q. 266. You were asked about the conditions of forests, and you state they are not in good condition, have dead trees, you have seen other forests that had as many dead trees?

A. Yes sir, I have seen them killed by fire, where they had more.

Q. 267. Don't you know that there has been a great deal of fire injury in the forests of North Georgia?

A. I know as a rule fire kills completely.

Q. 268. Don't you know it is a fact that it sometimes kills part of the trees?

A. Yes sir, and I know,——

Q. 269. Well, go on.

A. I know forest fires leaves signs which botanists can tell.

Q. 270. Don't you know from what you have observed that forest fires have damaged the forests in North Georgia?

A. Certainly, everywhere more or less.

Q. 271. Just passing through the forests of North Georgia, you see dead trees from time to time—don't you see a great many?

A. Yes sir, from time to time I see dead trees in the forests. It is natural that they should die.

Q. 272. I believe you said another condition that indicated there was trouble in these forests here is that the oaks have pink
53 leaves, is that what you said?

A. I said in smelter injury where the fumes are on them there are pink spots on the leaves.

Q. 273. I believe you say that acute zone of injury extends,——

A. I said one form of pink,——

Q. 274. —Extends from the Tennessee fifteen miles?

A. No.

Q. 275. How far does it extend?

A. The furthest point I observed it was in the neighborhood of eleven miles, I didn't look for it further, as I stated.

Q. 276. Was that within eleven miles air line of the Tennessee Copper Company's plant?

A. I presume eleven miles, maybe more.

Q. 277. How is that?

A. Let's see (Measuring on map) according to this map it is over eleven miles, but not twelve miles.

Q. 278. Between eleven and twelve miles?

A. Yes, sir.

Q. 279. Is that from Copperhill?

A. No, from Isabella.

Q. 280. Then it is about nine miles air line from Blue Ridge to the Tennessee Copper Company's plant and about twelve miles to the Ducktown Copper Company's plant?

A. As near as I can measure it.

Q. 281. Well, now from where we are sitting, we are in sight, I believe, of a sycamore, and a number of variety of trees, are we not?

A. Yes sir.

Q. 282. Will you look around and see whether or not you can see even a pink leaf anywhere in sight?

A. I couldn't from here, I refuse to do that, you have to go out and look more closely.

Q. 283. Can you see the least indication or evidence of any damage or injury whatever arising from any smelter fumes here in Blue Ridge?

A. Not from here, if I go out and hunt for it,——

Q. 284. Look out there and see.

A. That is not the way to look for it.

Q. 285. Do you refuse to look out at the window to see?

A. Yes sir, I look at it as a whole.

Q. 286. Are there not some leaves within thirty feet of you?

A. Yes sir.

Q. 287. Do you see any evidence whatever of injury from smoke on a single leaf?

A. (Goes to the window.) What kind of injury?

54 Q. 288. I said smoke injury?

A. That tree there is slightly yellow, it is not as green as it might be.

Q. 289. Do you think smoke did it?

A. Very apt to.

Q. 290. Do you think it did do it?

A. Yes sir, I do.

Q. 291. You believe,——

A. I told you they had chronic injury in Blue Ridge.

Q. 292. To what extent have you seen any evidences of smoke here?

A. A slightly yellowing on the leaves.

Q. 293. Do you swear it was done by smoke?

A. I swear smoke was doing it that way, that looks like it.

Q. 294. Is that the kind of injury you were swearing to a while ago?

A. No sir, that is not a good type of chronic injury, if you want to try to make a type out of that.

Q. 295. So you are not testifying where you got these specimens the conditions as they are in Blue Ridge?

A. No, no acute injury here.

Q. 296. The way you found these specimens, you were searching through the mountains?

A. No,——

Q. 297. —going to a tree and examining it and picking out the leaves?

A. No sir.

Q. 298. How did you get them?

A. They were so abundant, I could see the trees shining in my face, and I would go out and get them.

Q. 299. How close were they?

A. Some trees a few rods from the road, the injury was bad, I could see trees that were affected close to me and half a mile away. I could see they were injured by fumes.

Q. 300. Colored pink?

A. Nothing ilke it is here at Blue Ridge, nothing of the kind, Blue Ridge don't even show a good type of chronic injury.

Q. 301. You can see some peach trees from here, do you see any trouble with those trees?

A. I don't see them.

Q. 302. You could if you would turn your eyes and look at them?

A. Unless I am ordered to do so, I refuse to investigate that way.

55 Q. 303. You can see some corn from here, do you refuse to look at that corn and testify whether any injury to that corn, or not?

A. I refuse to investigate that way, that is undignified and unprofessional and inaccurate.

Q. 304. I am passing on the profession, you pass on your own business.

A. I refuse.

By COUNSEL FOR PLAINTIFF: We except to that because it is incompetent.

Overruled. Appeal prayed and granted.

Q. 305. You could see, if you would look out, you could see various kinds of vegetation, which is growing here, do you refuse to look?

By COUNSEL FOR PLAINTIFF: We except to the question, as the witness has no opportunity to make an investigation of any kind, to make a proper examination, and for that reason he does not have to answer.

Overruled. Appeal prayed and granted.

Q. 306. Are you acquainted with Dr. D. E. Fernow?

A. Very slightly.

Q. 307. What is he?

A. He is a forester, if I remember, stationed in Canada.

Q. 308. Don't you know at one time he was connected with the United States Department of Forestry?

A. I think so.

Q. 309. For twelve years, wasn't he?

A. I don't know.

Q. 310. Were you under him?

A. I was not. I have never been in the forest service.

Q. 311. Is he not one of the greatest authorities on Forestry.

A. I do not consider him as such.

Q. 312. You would regard him as reliable if he was Chief of the Bureau?

A. That is a matter of opinion, I do not regard him highly personally.

Q. 313. What is the trouble, has he ever disagreed with you?

A. I never had any personal dealings with him.

56 Q. 314. Did you ever meet him?

A. I have.

Q. 315. Who is the Chief of the Forestry Division now?

A. Henry Solon Graves, is Chief, he is not my chief though.

Q. 316. Dr. Hedgecock, on your trip last week, I believe you say you begun on Friday?

A. Yes sir, Friday at noon.

Q. 317. Where was the first place visited?

A. Went down along the roadway to Copperhill and inspected along the road and side of the ridge as we went.

Q. 318. You mean from Blue Ridge?

A. Yes sir, Blue Ridge to Copperhill and then over to Ducktown and back by the way of the Ducktown Smelters.

Q. 319. You went in an automobile?

A. Yes sir, stopped in various places, but didn't get off around Ducktown.

Q. 320. How far did you go away from the road?

A. Not over ten rods on that trip.

Q. 321. Who was with you?

A. Mr. Clarke, Mr. Johnson and a driver, I don't know his name.

Q. 322. You didn't take any samples on that trip?

A. Yes sir.

Q. 323. Which ones have you filed?

A. I took one specimen I reported about two miles from Blue Ridge.

Q. 324. Do you remember what it was without looking at the number?

A. A specimen of Quercus Coccinea, Exhibit No. 33.

Q. 325. You gave the latin name?

A. It is scarlet oak. We also got a specimen of blackberry bush from Angel's garden and some specimens reported, collected near Epworth, Georgia, specimens 27 and 31, the specimen from Angel's garden is 32.

Q. 326. You got all those on Friday?

A. Yes sir.

Q. 327. Now, on Saturday, where did you begin your trip? I believe you stated at Blue Bidge?

A. Yes sir, we stayed all night in Blue Ridge and started from here that morning.

Q. 328. Did you go horseback on your trip Friday?

A. Yes sir, went in an automobile both days.

57 Q. 329. Who was with you on that trip?

A. On the second trip Mr. Vestal and his son and Mr. Clarke and Mr. Johnson, Mr. Vestal's son drove the automobile. Mr. Vestal accompanied us—J. P. Vestal.

Q. 330. What different points did you visit on Friday?

A. We went over to Epworth and looked around a little in the forests and examined some specimens, that Mr. Vestal himself had collected, and wanted to know about, and then we went on along the road and stopped at various points, we didn't select specimens at every point we saw injury, but the next place we collected specimens was beyond Medola, about a mile, and the next place was at the foot of Barnes Mountain and up on the mountain, mostly on the mountain, in fact, it was all on the mountain, the foot was the slope of the mountain. The next place we collected specimens,—we stopped at several points, was on Granny Marr Mountain, we collected from those places. We didn't collect from every place we saw injury by any means.

Q. 331. How far by road was that from Blue Ridge?

A. I don't know, I had no way of telling.

Q. 332. You didn't read the meter on the automobile?

A. It had none on it.

Q. 333. You collected specimens at three points along the road?

A. Yes sir, Saturday we collected specimens at three points and examined at many points we didn't collect.

Q. 334. How fast did your automobile travel as you went along?

A. Various speeds, depending on the number of rocks in the road, slowed up so much I couldn't figure the rate.

Q. 335. What time in the day did you start?

A. We started in the morning, I think, about seven thirty o'clock.

Q. 336. What time did you get back?

A. After six.

Q. 337. At night?

A. Yes sir.

Q. 338. Have you no idea about how far you traveled?

A. About sixty miles, I should guess, from the lay of the country and contour.

Q. 339. Did you come back the same way you went?

A. We did not, we returned down through Copperhill

58 from Granny Marr mountain, I could show you on the map if I had it.

Q. 340. Then you came back to Blue Ridge the same road you came Friday?

A. Yes sir, came back from Copperhill to Blue Ridge without stopping, made a rapid run on that.

Q. 341. What became of those specimens Mr. Vestal gathered?

A. I suppose he has them and will submit them in evidence later.

Q. 342. What does he intend to do with them?

A. I don't know what he intended doing with them,—that is I didn't take possession of them.

Q. 343. Didn't you say you made a third trip, was that on mountain?

A. Went down and Mr. Shippen went out to an orchard and back. Did not make an extensive trip.

Q. 344. That was at Ellijay?

A. Yes sir.

Q. 345. Do you know how far that is from Blue Ridge?

A. I do not.

Q. 346. Now, you have introduced specimens which you say were injured otherwise than by smoke?

A. Yes sir.

Q. 347. Well, to an ordinary layman those leaves present about the same appearance as those injured by smoke, don't they?

A. I don't know, I am not a laymen, and I cannot speak for him. they don't to me.

Q. 348. Now, suppose a tree with those leaves was forty yards away, fifty yards away, can you tell the difference?

A. Yes sir. I will let you juggle my specimens and pick them out.

Q. 349. I know, but suppose you saw a tree fifty yards away that has discolored leaves on it, now, can you tell what it was discolored those leaves, until you walked up and examined it?

A. Fifty yards away?

Q. 350. Yes sir.

A. You couldn't be positive fifty yards away, you might not readily fifty yards away, you couldn't be certain. That is not the way I investigate.

Q. 351. Then you cannot tell whether they are discolored along the skeleton of the leaf?

A. No sir, not that distance. I find scientific work is done
59 in a more careful way.

Q. 352. As I say, you don't know how it would be to a man that is not versed in that work, who has not made a special study of it?

A. I wouldn't want to vouch for his investigation.

Q. 353. I wouldn't want to vouch for some botanists either. Well, Doctor, can you always, even you,—Can even you a scientist, be always positive whether a tree is damaged by smoke?

A. In July and August, I believe I can. When frost comes, after frost, you have fall discoloration, it mixes up things and it is more difficult, but you can even then see smelter injury mixed with the fall discoloration.

Q. 354. Can you swear positively you can tell in every instance in July and August?

A. I have never failed. I think I know. So far as I have been tried, I never have failed.

Q. 355. Did you ever have a test made to see whether you failed or not? You have just passed on your own judgment?

A. I have had people submit things to me that I didn't know was injured by smelter fumes and I told them what it was.

Q. 356. You know, right or wrong?

A. They told me where they got it, what the cause was.

Q. 357. How do you know they knew?

A. They knew, they were botanists and knew under what conditions they were taken.

Q. 358. What botanists did you ever have submit those things to you?

A. Blank and Shipp of Anaconda Copper Company. That wasn't done before a Court, just a personal matter. I never had those submitted to me in court.

Q. 359. Doctor, is it not a fact that oftentimes plants are treated with poison,——

A. I would like to make a qualification. A man might urinate on a special spot and urinate on the leaves, and it would look like smelter injury, but a man could not urinate on an entire
60 forest. I will qualify that still further, certain acids might make up a solution and you could pass them to me, and they might look so much like smelter injury—it might result in artificial injury. You can manufacture specimens like that. It has been done in Court by smelter experts.

Q. 360. It is a fact that poisons are often used as a remedy for plants?

A. They are.

Q. 361. You spray with certain poisons for certain troubles?

A. Yes sir.

Q. 362. Is it not a fact that smelter fumes would be good for certain diseases?

A. Smelter fumes, if they could be applied just at the time and in the right manner, they might be a benefit to certain fungous troubles. I don't know that they would not, but they would have to be applied in a very diluted quantity and hold them around the plant a definite time, and not applied any more.

Q. 363. Is it not true,——

A. I want to add to that, it has never been used to my knowledge, as a fungicide.

Q. 364. Is it not a fact that sulphur fumes from furnaces are applied,——

A. Yes sir, they are applied in North Georgia in diluted quantities.

Q. 365. Don't you think it is probable that they are often beneficial to the plants?

A. I doubt it.

Q. 366. Don't you think that it is very probable that they are applied often to plants suffering from fung-us disease, in proper quantities so as actually to be a benefit to the plant?

A. I doubt it very much. I never heard of anybody doing that?

Q. 367. They are destructive to certain classes of fung-us diseases, are they not?

A. I don't know, I am assuming that fungus is more sensitive to

sulphur than plants, I don't know it to be a fact. Certain kinds of fungus might be more sensitive to the gas.

Q. 368. From what little observations you have made in North Georgia, the plants are not sensitive to fung-us diseases like some others you have seen?

61 A. I have not noted it, I have found some fung-us diseases and I have also found fung-us diseases elsewhere.

Q. 369. You of course, have observed dead trees from time to time, and in looking at the foliage on the forests generally through North Georgia, is it not a fact that they are subject to very few diseases?

A. No, not,—No, I cannot say they are subject to very few diseases, I think they are subject to as many diseases as you will usually find in forests.

Q. 370. Now, with the exception of this little stretch of damage you found along here in one place, just observing the forests as a whole, do you know of any forests anywhere that look healthier than the forests of North Georgia look?

A. Where?

Q. 371. Anywhere you have visited?

A. In what state?

Q. 372. Anywhere in the Southern States.

A. Yes sir.

Q. 373. Where?

A. You will find the forests from Murphy to Asheville, such as,—except the chestnut, is healthier than here.

Q. 374. Is there not a good deal of hemlock dying through that section?

A. I didn't see it, I looked all the way over.

Q. 375. You did notice the chestnut was dying?

A. Yes sir, I found that dead beyond Asheville.

Q. 376. That chestnut disease does not strike the North Georgia country?

A. I have not found it.

Q. 377. You don't know how it is in Tennessee?

A. I have been in the Government forests west of Knoxville in several places, but have not found it in there.

Q. 378. You have never been in the forests of the Cumberland Mountain- in Tennessee?

A. I believe I have not been on the Cumberland Mountains, they lie further west,—No, I have never been in there; I have been in this main range to the east.

Q. 379. Well, now what diseases are prevalent in North Georgia forests, you say they have some diseases, not so healthy as further east?

62 A. I didn't say that.

Q. 380. Murphy is east, is it not?

A. I cannot say as to all the diseases in that region, because I have not examined those forests closely, I just passed through and looked at the forests. You asked me if I knew the forests as a whole were

healthy. I have not studied the root diseases. Before I could state about that, I would have to make a more careful study.

Q. 381. Now, this injury from smoke, does that result from the poison that enters the leaves?

A. You want my understanding of how it takes place. As far as I can ascertain that sulphur gas, the particles of sulphur gas go in and unite with the water in the cells, and get into the membrane of the leaf, and thereby froms sulphuric acid, or sulphurous acid, probably both. Both are injurious to the cell and they rob them of their water, then by evaporation that acid may concentrate and rob the cell of all the water. Repeated processes of that kind will kill it.

Q. 382. The injury is an injury to the leaf?

A. An injury to the cells of the leaf.

Q. 383. Hence, the injury results entirely from the breaking down of the structure of the leaf?

A. Yes sir, and stealing the water away from it.

Q. 384. The leaves are the lungs of a tree?

A. The lungs and the stomach.

Q. 385. Of course, you will find where the leaves are killed on a tree one year, and the tree will come out in full leaf the next spring?

A. It can if stripped by insects. You can go out and strip all the leaves off, I have done it. The tree is liable to leaf out in the fall again, if that is done early in the season, but this injury shows on it.

Q. 386. Of course, if that is repeated often enough it will kill the tree?

A. If you repeat it three times it will usually kill the tree.

Q. 387. Owing to the variety of the tree?

A. Practically all known plants that have been experimented on were killed the third times, if the insects do it,—We have done that in experiments.

63 Q. 388. Doctor, did you ever use a borer to take small sections out of the tree in order to examine the rings?

A. No, but my men use them, I have been with them when they used the borer, I have been out with them when they used it.

Q. 389. So they are instruments which are used in your department?

A. Yes sir, for rough work, it is done because we don't want to kill the tree, not because we want accuracy.

Q. 390. Don't you know that is the most accurate method of all methods to determine the growth of forests generally?

A. No.

Q. 391. What is the best?

A. The best method, to know absolutely, the absolute growth of the tree is to take a section through and through.

Q. 392. Just cut the tree down?

A. Yes sir, the most accurate method to determine the growth is to take a whole section of the tree.

Q. 393. Then if you were going to investigate for accuracy, you would go in and take a whole section?

A. I would take part of a tree clear through.

Q. 394. Don't you think you could go in a forest and carefully select trees, perfect round trees, and use the borer and tell with almost absolute accuracy about the growth?

A. I don't know it.

Q. 395. Have you experimented enough to know?

A. I have been with the men who have experimanted enough to know, I have taken enough sections of the whole tree to know what it is like.

Q. 396. Don't you know that is the way the German experts determine the growth of forests all together?

A. I have taken many sections in my work in the smelter regions in the west, I have taken whole sections of the trees.

Q. 397. Don't you know that is the method used by the German experts?

A. I do, and I know Americans are getting to be more accurate than Germans in scientific work.

Q. 398. Don't you know that the Americans, in so far as science is concerned, are following the Germans?

64 A. No sir, we have some better experts, and the Germans have said so.

Q. 399. They like to be complimentary to you?

A. I don't know.

Q. 400. Are you familiar with the German authors on the subject?

A. To some extent, I have translated some articles for my own use.

Q. 401. Are you acquainted with the works of Horseldorff Lindau and Rauch?

A. Yes sir, I am acquainted with the works.

Q. 402. That is a work that is recognied as good authority, is it not?

A. It is very good authority, I understand, on a good many subjects, I don't know whether I agree with them or not in all their findings, I don't think I do. I agree with them in some findings and others I don't. They are chemists.

Q. 403. I show you a statement from their work on Page 105, it is marked there, I wish you would translate that and state whether or not,——

A. If you will give me until to-morrow morning, I will translate it.

Q. 404. State whether or not you agree with the statement there made?

By COUNSEL FOR PLAINTIFF: We except to the statement as it is irrelevant, it is not a proper question.

Overruled. Appeal prayed and granted.

By COUNSEL FOR DEFENDANT: It is proper if answered.

A. I will not translate it myself, unless compelled to.

By COUNSEL FOR PLAINTIFF: We except for the further reason that it is written in German and if General Fowler will ask the question, or the substance state the substance of the position

taken, in English, I have no objection to the witness stating whether or not it is authority.

Overruled. Appeal prayed and granted.

A. I know what the statement is roughly, it is Recommendation of the Intrement Borer.

Q. 405. You understand German well enough,——

A. I know what he is driving at off hand, I don't care to translate it with accuracy.

Q. 406. He speaks of its use by Berger and Rust, and they recommend it highly. Do you agree with that or not?

A. I do not.

Q. 407. You think you are a better authority on that then the German authors?

A. I do, I have worked with it.

Q. 408. Do you know whether he worked with it too?

A. I do not.

Q. 309. You know your own department uses it a great deal of the time anyway?

A. For rough work, where we don't want to cut the tree down, we use it ordinarily for rough work, but not for accurate work.

Q. 410. If a man will exercise and take time and get a nice well rounded tree, it is pretty accurate, is it not?

A. A well rounded tree, I don't think it is, find a well rounded tree, accuracy,—if you ask my reason, I will give it. You have not asked my reason yet.

Q. 411. Well, tell why it is not?

A. Because trees grow unevenly, none of them add growth equally on all sides, owing to the presence of other trees nearby and even the presence of a hillside.

Q. 412. Now, suppose you take a number of trees in a vicinity which show the same results, is not that practically conclusive evidence that the borer is correct?

A. Yes sir, if such a thing could happen, yes sir, but it wouldn't all do that.

Q. 413. How do you know?

A. I have been with men who used them. Dr. Weer was under me working constantly on work of that kind.

Q. 414. How many days all together have you spent with those borers in all your work?

A. Six months.

Q. 415. Right along by the side of them?

A. Yes sir.

Q. 416. You never used one of them yourself?

A. No sir, I am fifty years old, and I let the younger men use them.

Q. 417. And you examined them for six months?

A. I saw them. The other fellow- do that. I let the rest do that, the men under me.

Q. 418. Did you in one single instance ever know of the borer to tell a falsehood, did you ever catch it in a falsehood?

A. I said I hadn't used them myself.

66 Q. 419. You said you examined samples for six months; state whether or not you ever saw where an Intrement Borere told a falsehood?

A. Yes sir.

Q. 420. Tell where and when and what it was about?

A. Dr. Weer has taken samples of trees with Intrement Borers and then cut them down and found the samples did not show a representative growth of the tree at all, because it happened to cut in the side that wasn't a representative growth of the rest.

Q. 421. Where was that, and did you see it done?

A. I did not see that particular thing done.

Q. 422. You don't know anything about it, except what he told you?

A. Hearsay evidence, I consider it good because he is a man of his word.

Q. 423. How many times was that done?

A. I don't know. I was not doing that for Government suit, or it would have been done differently.

Q. 424. How many times did that happen?

A. I don't remember. I know it has happened enough that we don't consider it accurate. We have since been cutting the trees down systematically and take sections from the trees at the butt, then four feet higher, and four feet higher clear on up.

Q. 425. Now, here we will suppose is a tree that has grown irregularly, more on one side than on the other, will not the borer show exactly the relative growth, regardless of the tree?

A. It will for that particular spot, that particular side of the tree the borer happens to go in on. You could go all the way around the tree, but you had just as well cut it down.

Q. 426. But don't you know that will show the relative growth of the rings, of course, showing more growth on one side than on the other?

A. Yes sir, it will show, if you bore enough holes, but if you do that, you had just as well cut it down in advance.

Q. 427. Suppose a tree just naturally grows more on one side one year after another, now why will not the borer show on which side it is growing the most, relatively, I mean between the

67 several years, will it not show accurately each year how much it grows?

A. It will show fairly accurately at each spot, but if you should lose the bark from the end of a section, you wouldn't know where the end of the section was, which was the inner or outer end, the Intrement Borer taken out, and if the bark was to lose off you wouldn't know which was the outer end or inner end.

Q. 428. Suppose you kept the bark, would you know?

A. Yes sir, you would know the growth of the tree for that particular side of the tree.

Q. 429. Now, suppose one has made a tree growth in sections by blocking out of tree, by taking blocks from a number of trees widely scattered, and having borings from quite a number of trees

in other places, and also observing cross sections of trees, and they should all be uniform, or practically uniform in the rings of those various trees, showing that the growth was stunted in 1906 or 1907, that they remained stunted until 1912, and you knew it also to be a fact that in 1906, the stack of the Tennessee Copper Company was increased in height to 325 feet, and that these blocks and borings and cross sections were taken from trees within the acute zone of injury you have mentioned, don't you know that from such a state of facts, that the elevation of that furnace was the cause of that decreased growth?

A. No, because you have not taken all the factors into consideration.

Q. 430. I didn't say a word about any other factors, I put to you a theoretical question,——

A. I will say no.

Q. 431. Wait until I get through. Under the facts stated now, that is, suppose that you know only this, that the examination of these blocks and borings and crossing sections have been made within the acute zone you have spoken of, and they show there was a stunting of the growth beginning in the year 1906, and you further know that the stack of the Tennessee Copper Company was increased in height in 1906, wouldn't that be evidence to you that the increased height of the stack was what caused the stunting of the growth?

A. No, not until I had investigated other factors?

68 Q. 432. Then those facts wouldn't have any bearing whatever on your mind?

A. Not in my final conclusions.

Q. 433. I didn't ask you for a final conclusion. Wouldn't it be any evidence at all to you?

A. Yes sir, in part, but I wouldn't base a conclusion on that evidence finally until I investigated further.

Q. 434. Just state what those other factors you are talking about are, which you would take into consideration?

A. The rainfall in that particular country from year to year. A tree grows more when it has plenty of rain than when it has not. I would have to also know the rainfall from year to year. The smelter fumes are not uniform, they go out and injure a tree in one place, and next year they don't injure that tree, go out in various directions. I could pick out trees that never had any injury last year, and then the previous year, you could tell by the foliage. I could go out then on the other hand, and pick out trees that have been injured the past few years.

Q. 435. I didn't ask you anything about,——

A. You asked me why, that is why.

Q. 436. I didn't ask you anything about anybody,——

A. I would be afraid that evidence could be manufactured that way, and I would want to protect myself.

Q. 437. Do you mean that you would manufacture evidence?

A. No, but other people could.

Q. 438. I didn't say anything about that, I said suppose you go

through a forest as an honest man, taking the trees generally as they come, trying to pick out the most exposed places, and find that to be the results?

A. Leaving out my allusions to crooked work, unless I knew whether there had been smelter injury there, I couldn't pass on it.

Q. 439. But if it shows a stunted growth generally throughout the entire forest in that acute zone during the year 1906, immediately thereafter, beyond what it was before, wouldn't you at-
69 tribute it to that cause, that is the raising of the Tennessee Furnace stack?

A. I would if the sections were taken as a whole, and they showed it and I knew it was not caused by decreased rainfall or by the fact that it had escaped the smelter fumes, but I would not be satisfied until I was sure about the other factors.

Q. 440. You don't know whether there was less rainfall in 1906, 1907, and 1908, and previous to that time?

A. I don't know.

Q. 441. You never heard any such things intimated?

A. I don't know anything about the rainfall.

Q. 442. There was less rainfall in 1913 than ever known in this country?

A. I don't know anything amout the rainfall, I have not investigated it.

Redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. Doctor, you were asked about who suggested to you where you should go on last Friday and Saturday, I will ask you when was the first time you saw the lawyers in this case who represent the State of Georgia, and talked with them?

A. Last night.

Q. 2. I will ask you whether or not you have selected every sample you have offered in this case, before we saw you?

A. I did.

Q. 3. We did not know where you got them, or suggested anything about them?

A. Mr. Johnson assisted me in getting the things ready, I had them ready.

Q. 4. You were introduced as a witness to-day and you had all these specimens ready?

A. Yes, sir, I didn't know what was the name of the lawyer until you came here and registered.

Q. 5. Now you were asked the hypothetical question by General Fowler that if the acid was taken out of the smoke at Ducktown, or eighty or eighty five per cent, I will ask you from your observation by seeing it and smelling it, whether or not there was enough sulphur dioxide in that smoke to injure plant life?

A. I should say there was.

70 Q. 6. I will ask you one other question, if the time of the year trees might be injured or stripped of their leaves, would that have much to do with the injury that would result to that tree?

A. It would.

Q. 7. So if they were stripped off when the first leaves came out, the first of June, if the leaves were taken off, what would be the effect compared to stripping them off about the time frost come?

A. Stripping them off about the time of frost wouldn't have very much effect on the trees. Stripping them off in the early part of the season when the tree is in bloom, it would have a great deal more effect.

Recross examination.

By COUNSEL FOR DEFENDANT:

Q. 1. How much sulphur dioxide in that smoke you smelled down there?

A. I didn't analyze it, I don't know.

Q. 2. Your nose don't enable you to state how much sulphur dioxide there is in smoke?

A. My nose is very sensitive, it is a trained nose, I have been smelling fungii diseases on trees and plants a great deal, and I know the odor of fungi-.

Q. 3. Is that one of your methods of investigation, smelling?

A. No, not one of my methods of investigating.

Q. 4. Now, as I understand you, you don't pretend to know much about the smoke itself?

A. Chemically I do not.

Q. 5. You don't have the least idea of what per cent of sulphur dioxide there was in that smoke?

A. I do not know the per cent in it. I have not qualified as an expert along that line.

Q. 6. Just one or two times you say you have smelled sulphur dioxide in the smoke?

A. Yes, sir, every time I came in contact with it.

Q. 7. Didn't you testify on cross examination that on one or two occasions you were near the furnaces of the Ducktown Copper Company and smelled this copper fumes in the smoke? That was within a few hundred yards of the furnaces?

71 A. Yes sir.

Q. 8. You don't undertake to say what per cent of sulphur dioxide was in the smoke, do you?

A. No, I could not say unless I analyzed it.

Q. 9. You don't say that if any plants had been growing where you were standing that the smoke would have injured them?

A. Yes, sir, I do.

Q. 10. Are you swearing that positively?

A. I swear positively that the copper smelter fumes has odor in it, it is injurious.

Q. 11. Do you state positively that every time you detect sulphur smoke odor it will kill plants?

A. Yes, sir, you can smell it when less than one part in a million, and that will injure plants.

Q. 12. Don't you know you cannot smell it when there is less than that amount?

A. No, I don't know that I can, I have never seen that determined, that is a chemical measurement of it.

Q. 13. Have you ever made any experiment yourself about what per cent of sulphur dioxide it takes to injure plants?

A. No, sir, because Dr. Haywood does that kind of work?

Q. 14. You have not made any experiments at all?

A. No, sir, not with gases.

Q. 15. Don't you know that experiment is based on placing plants under a receptacle of some kind that contains that much sulphur dioxide in solution.

A. Either that or upon plants put in a green house.

Q. 16. That is where they have a continuous application on the plants?

A. A continuous application for a definite period.

Q. 17. You know that condition is entirely different when it is out in the open atmosphere?

A. I don't know that it is entirely different.

Q. 18. I am going to read to you from an affidavit filed in this case by Dr. Fernow, and ask you if you don't think he is telling the truth about it?

By COUNSEL FOR PLAINTIFF: We except to the reading in evidence, any statement of Dr. Fernow, because it is not given in this case and the paper speaks for itself.

72 Overruled. Appeal prayed and granted.

"In strange contrast to these practical figures is the statement of authorities (Schroeder and others) that one part in a hundred thousand inflicts great injury, and that even one in one million is injurious. The strangeness vanishes if we investigate the basis for the assertion. It is based upon laboratory experiments which in no way, physically or chemically represent conditions in the open air. These chemist overlook that the plant in these experiments is deprived of defense by removal from the natural conditions of its functions; that sulphurous anhydrid in the nastent state, as employed in these experiments, is much more highly corrosive than the same substance under the conditions in which it is found in the fumes, and that much of the sulphur dioxide traveling through the air is changed into the less active trioxide."

Q. 19. Are those things true?

A. They are not.

Q. 20. What is it that is not so?

A. Dr. Fernow is giving his personal opinion, I do not agree with him.

Q. 21. Tell me what part of that statement is false?

A. The assumption that he has got entirely different conditions in a greenhouse than outside?

Q. 22. Is it not true?

A. No.

Q. 23. Don't you know that it is different?

A. No, I don't know that it is.

Q. 24. Don't you know that in a greenhouse that the plant remains continuously in contact with it, there being no air currents.

A. No, sir, there are currents, even in bell jars, that has been proven.

Q. 25. Now, if the whole atmosphere inside of the hothouse or your bell jar, contains this sulphur dioxide, would it not be different from what it is outside?

A. It would be somewhat like the conditions outside where there are alternating currents.

73 Q. 26. But on the outside, they have one movement of atmosphere and the next moment none.

A. The next moment they will have atmosphere and it will be different in amount.

Q. 27. What would be the difference in the application of the two, wouldn't there be a difference?

A. Be a difference between a constant application and a moving application.

Q. 28. Is it not also true that sulphur dioxide traveling through the air is changed into trioxide?

A. Yes sir, also true that nasent gases inside of one of those chambers such as Dr. Haywood uses, would also be changed to a certain extent to trioxide, that is the reason why I don't agree with Fernow.

Q. 29. Did you ever try that?

A. Fernow is no smelter expert.

Q. 30. Are you, I believe you swore you were not?

A. I have not sworn I was or was not.

Q. 31. Are you?

A. I am a plant pathologist, I study the diseases of plants.

Q. 32. Let me read a little further.

By COUNSEL FOR PLAINTIFF: We except to that reading and that class of evidence as incompetent and immaterial and in no way illustrates the issues in this lawsuit.

Overruled. Appeal prayed and granted.

"Stoeckhardt's Experiments, on the other hand,——"

Q. 33. Do you know Stoeckhardt?

A. I know his work.

Q. 34. Is he a good authority?

A. In some ways, and in other ways,——

Q. 35. On this thing, is he recognized as an authority?

A. He is recognized by the smelter people as an authority, I believe Dr. Fernow is also.

Q. 36. Are you especially biased as to the smelter industry?

A. No, but I don't care about the evidence of some of those men.

Q. 37. What is it you have against the smelter industry?

A. Nothing against them.

74 Q. 38. Well, why do you reflect on these other people because you say they are authority for the smelter interests,

what evidence have you given that is in favor of the smelter interests?

A. I cannot say, because I don't remember now, have some things that I can remember.

Q. 39. Do you say he is not a recognized authority on this subject?

A. By whom?

Q. 40. By you and other scientists?

A. I don't recognize him as as good authority as some others.

Q. 41. Tell me one man you recognize as an authority?

A. Sourroer is a pretty good authority—I don't agree with him, he is fairly good, I don't agree with every man just because he is a good authority. If I have studied the subject and think they are wrong I don't agree with everything they do, because they are noted men.

Q. 42. Then as I understand, you don't agree with anybody, you have your own ideas and don't agree with the ideas of anybody else, is that it—you are an authority unto yourself?

A. I don't agree with anybody—is that the way you put it?

Q. 43. Yes sir.

A. No, I will not answer that in that form—that personally reflects on me.

Q. 44. No sir, not a bit.

A. They have some works that I agree with and some works that I don't. Just because they are noted men don't cause me to agree with them in everything. I don't disagree with all men.

By COUNSEL FOR PLAINTIFF: We except to any further examination along that line as irrevelant and incompetent and not pertaining to this case. I think the question has been fully elucidated.

Overruled. Appeal prayed and granted.

Q. 45. I will now read to you what Prof. Fernow said.

"Stoeckhardt's Experiments on the other hand, showed that deciduous trees, treated in a covered glass, i. e., under conditions
75 unfavorable to the plant, with a mixture of one in fifty thousand for weeks had no effect whatsoever, and even stronger mixtures, one in thirty thousand and one in twenty thousand repeatedly applied had no effect."

Q. 46. Is that so?

A. I do not know, I will not accept his statement of that, or Dr. Fernow, what Dr. Fernow has given there. I refuse to pass any opinion on what Dr. Fernow says or anybody says.

Q. 47. Do you know as a matter of fact whether or not a mixture of one in fifty thousand when applied for weeks will have material effect on deciduous trees?

A. I do not know from my own experiments, I have not experimented with it any.

The next witness, H. L. JOHNSON, having first been duly sworn, deposed as follows:

Direct examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. What is your name?
A. H. L. Johnson.
Q. 2. What position do you hold?
A. Forester.
Q. 3. In whose employ?
A. The United States Forestry Service, Department of Agriculture.
Q. 4. Where are you stationed?
A. At Etowah, Tennessee.
Q. 5. What is your age?
A. Thirty one years.
Q. 6. How long have you been engaged in the study and work at which you are now employed?
A. Since July 7th, 1907, I begun the study of forestry.
76 Q. 7. Have you graduated from any college of Forestry?
A. I graduated from Yale Forest School, in 1909, in June.
Q. 8. How long have you been in the service of the United States Government?
A. Five years, on the 1st of July, 1914, I finished my fifth year.
Q. 9. What are your particular duties in Tennessee now?
A. I have two division- of the survey of lands which we are purchasing, also supervision of the examination and valuation of the lands which we intend to purchase, and in addition to that I have administrative work in connection with the acquired lands.
Q. 10. By whom were you ordered to take part in this case?
A. I was ordered to come here by the Assistant in the Department of Forestry, Mr. Reed. I had a letter from him to me, he gave me the correspondence in the case and directed me to act in accordance with that correspondence.
Q. 11. Do you know Dr. Geo. W. Hedgecock?
A. Yes sir.
Q. 12. Did you accompany hi*i* on certain trips he made in North Georgia recently?
A. Yes sir.
Q. 13. Were you present when he took samples you have seen him introduce?
A. Yes sir.
Q. 14. Are you familiar with the forests in North Georgia in the district which has been described as the zone of acute injury surrounding the Ducktown smelter works and the Tennessee Copper Company's smelter and works?
A. The only intimate knowledge I have of those forests in North Georgia is confined to what I saw on the trip of Saturday of last week—Friday and Saturday of last week, while with Dr. Hedgecock. In addition to that I have some actual knowledge of conditions along

Jack River in Georgia, for four months in the winter of 1912 and 1913, I was working there with E. B. Clarke, when we purchased the area which is now under his charge, which lies southeast of here, we acquired from—which lies southeast of here anywhere from twenty five to thirty five miles. I have a very good knowledge of conditions there, because I was engaged in this examination
77 and valuing of the soil and timber on those lands.

Q. 15. Is that within or without the area discribed by Dr. Hedgecock as the zone of injury, with relation to the Ducktown Sulphur, Copper & Iron Company?

A. It is outside of the three zones described by him, that is to the best of my knowledge. I would prefer to substantiate that by exact location.

Q. 16. With reference to the forests of North Georgia, just south of the Georgia line, state whether or not in your opinion, those forests are normal or sub-normal condition?

A. They are not normal.

Q. 17. What is the condition?

A. I will confine myself to the ground I covered with Dr. Hedgecock.

Q. 18. What ground did you cover, approximately stated, just state the points to which you went?

A. We went over the main wagon road from Blue Ridge to Copperhill, also went to Epworth, Georgia, we went from Epworth on one trip through Madola, also went through a little place called Pierceville, On Friday I should think we covered something like fifty miles, most of it in Georgia. On Saturday we traveled perhaps something like sixty or sixty five miles, principally on the Georgia side.

Q. 19. Where did you go on Saturday?

A. On Saturday we left here with John Vestal who came after us in an automobile and took us to Epworth, where we found J. P. Vestal, his father. We took him with us, I was with Dr. Hedgecock and Mr. Clarke, five of us, and went from Epworth out through Madola to a farm house of a Mr. Barnes, then went up on Barnes Mountain. We took Mr. Barnes and went up on the lead known as Barnes Mountain, which comes off the long Mountain known as Mule Top, comes off in an easterly direction, and spent about two hours up there.

Q. 20. Did you go to Granny Marr Mountain?

A. Yes sir, in the afternoon of the same day.

78 Q. 21. And all the section between what you covered,—between Mule Top and Granny Marr and Barnes Mountains?

A. On the road, yes sir, but not through the woods.

Q. 22. Judging by your travels to that section, state what is the condition of the forests in that district?

A. Well, I would say it was abnormal, I would say that as to injury.

Q. 23. Taking into consideration the proximity of the Ducktown Copper Company and the other company of which you are

aware, to what would you attribute the injury to the forests just south of the Georgia line?

A. To the best of my knowledge and belief it has been caused by smelter fumes, sulphur dioxide.

Q. 24. Mr. Johnson, have you ever done any stem analysis?

A. Yes sir.

Q. 25. I hand you, Mr. Johnson, Exhibit No. 66 to the deposition of Prof. Bain, who testified for the defendant, I will ask you whether or not you can judge as well from that piece or section of tree as to the annual growth of the tree as you could from an entire cross section of the stem?

A. No, not as well as from an entire cross section.

Q. 26. State whether or not the annual rings are uniform in plants or trees entirely around the tree?

A. They are not, that is if they are it is an exception to the rule.

Q. 27. As a general rule they are not?

A. As a general rule they are not symmetrical.

Q. 28. Are you familiar with the instrument known as the Intrement Borer?

A. I am.

Q. 29. Did you ever use it?

A. I have.

Q. 30. Give your opinion of the use of the Intrement Borer as an accurate method of determining the annual growth of trees?

A. I used it in the summer of 1907 under the direction of a man who was then Prof. Gross, now a Forester in the employ of the United States Government. The results we got in Milford. Pennsylvania, were not satisfactory. In Pike County.

79 Q. 31. Are you familiar with the use of that instrument in Germany, from personal cnfw shr

A. I know it is mentioned on the forest work, used in the work in the forests. I refer to Schlieck's Manual, it is described there.

Q. 32. State if there is any more successful *to* use in the forests of Germany, and why it is more successful?

A. I cannot state it is more successful in Germany than it is here.

Q. 33. I say, if it is.

A. I can state what I consider a good reason, it is as follows: The German and France Forests, I will confine myself to the German forests, have been under improvements, that is they have received attention in their production. In some cases for over three hundred years. Some of those forests have been produced by artificial planting, and the trees are of uniform size, planted a uniform distance apart and have large growth records, and are of more uniform character. The result is that those trees under that attention, produce a good uniform form of the tree. Now those trees would be more systematic, in other words, the pith in the center of the tree would be located nearer a geometrical center than the trees growing in virgin forests as they do in America. That system of production produced by uniform conditions of light and space,

the production has been controlled by those conditions and they make a more uniform tree and growth.

Q. 34. State whether or not the protection which a tree receives, preserving the shape, the life and shape which it receives, and similar conditions have to do with the growth in one direction or another?

A. It is generally believed, and is my belief also that those conditions do affect it.

Q. 35. Can you tell anything from a section of a tree unless you have the height or core of the tree, accurately?

A. You say tell anything, what do you mean?

Q. 36. As to the growth of the tree, the starting point
80 from which to make your calculations?

A. Yes sir, you can trace the growth history of the tree for the part which you have.

Q. 37. For that portion of the tree which you have?

A. Yes sir.

Q. 38. Can you trace it for the entire growth of the tree?

A. That would be largely a matter of speculation. You couldn't tell what had happened to the part you didn't have.

Q. 39. What effect upon the forests as a whole, does defoliation of trees have?

A. It affects the forests in a great many ways, it not only affects the growth of a few trees, or of an individual tree, but affects the entire balance of the forest growth. For instance, the less shade you have, it will effect the soil moisture, in forests it is always attempted to keep the ground shaded and to allow the litter and humus to accumulate, that is a natural fertilizer in a forest, and if the trees are depleted or destroy the leaves, it lets the sun in and dries the ground out and makes it subject to fire, and it is a well known fact, that will result in decreased growth or amount of wood that is produced.

Cross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. Mr. Johnson, how long have you been located at Etowah?

A. I came to Etowah the 15th of July, 1913.

Q. 2. Did you have charge of the land which the United States Government bought from the Wetmore estate?

A. Yes sir.

Q. 3. How long has it been since they were purchased?

A. They have not yet been purchased, the purchase agreement betwen the Secretary and Wetmore people has been signed up, the deeds have not passed yet.

QQ. 4. The price and terms of sale have been agreed upon?

A. The purchase contract has been drawn between both parties, to the best of my knowledge.

81 Q. 5. How many acres of those lands is the Government to purchase?

A. Of the Wetmore property?

Q. 6. Yes sir, of the Wetmore property?

A. Allow me to refer to my map. (Looking at map.) This acreage was not determined by careful survey, but simply by computing the number of sections and parts of section, assuming the average size to be 640 acres. It is very close, within 200 acres, anyway. The Wetmore lands, known as the Ocoee Timber Company, 33,600 acres.

Q. 7. How near do those lands lay to this Ducktown Copper Company's plant?

A. Do you want the average distance?

Q. 8. No, I want the closest?

A. To Ducktown?

Q. 9. Yes sir.

A. I will give the distance from the Isabella Mine to the lands we have under purchase contract—five miles as near as I can scale it.

Q. 10. How near is the closest lands to the Tennessee Copper Company? That is to Copperhill.

A. The closest purchase under purchase contracts is four and one half miles as near as I can scale it from Copperhill.

Q. 11. Do you know that Wetmore had a suit pending for some time against these companies for alleged damage to their lands?

A. If I had heard it, I have no recollection of it.

Q. 12. Then you don't know they had a suit and dismissed it?

A. No sir, I say if I ever heard it I have no recollection of it.

Q. 13. Did you make an examination of the timber on the Wetmore property before it was purchased by the Government?

A. Not personally, Rosser had charge of the field party. I was with him on several occasions while the examination was going on, several days.—perhaps ten days all together.

Q. 14. Is it on account of the intended purchase by the Government, that the Department of Agriculture has asked you and Dr. Hedgecock to testify in this case?

A. I cannot say. It is merely a matter of supposition, I am here under offic-*la* orders from my superiors, is all I know about it.

Q. 15. You know that, you know that the Government has purchased large areas of land in the vicinity of these copper
82 plants, and your draw your conclusions from that?

By COUNSEL FOR PLAINTIFF: We except to that question as calling for a conclusions.

Overruled. Appeal prayed and granted.

A. I have not drawn any conclusions.

Q. 16. None at all?

A. No sir. I have no conclusions in the matter yet.

Q. 17. Then you have no suspicion as to why you are here?

By COUNSEL FOR PLAINTIFF: I except to that because irrelevant and immaterial, and for the further reason he has already answered the question that he has reached no conclusions.

Overruled. Appeal prayed and granted.

Q. 18. You don't know of any other reason why you should be brought here other than the Government is personally interested in the matter?

A. That might be a reason.

Q. 19. Do you know of any other?

A. No sir, I don't know of any other reason. I might suspect one, but I don't know of any other.

Q. 20. Now, Mr. Johnson, you stated that the condition of the forest through which you and Dr. Hedgecock traveled the other day was not normal, in what respects was it not normal?

A. Well, the foliage for several miles was so short brown and red,—we passed one place where some scarlet oak had shed at least two thirds of the leaves, and the leaves covered the ground in the road under the trees.

Q. 21. How many oaks were in that condition?

A. At that point I think two or three standing right along the side of the road.

Q. 22. Were they the only ones you found in that condition?

A. The only ones that were so nearly defoliated.

Q. 23. In all those miles which you traveled you just found two little scarlet oaks?

A. I didn't say little.

Q. 24. How big were they?

A. Sixty to seventy feet high.

83 Q. 25. How big at the butt?

A. Probably seventeen inches.

Q. 26. You found two oaks in all those miles from which two thirds of the leaves had fallen?

A. Yes sir.

Q. 27. Did you find any other trees at all from which any leaves had fallen?

A. I couldn't say positively, a good many leaves were on the ground, I couldn't say whether they came off recently or not. I did see other trees from which twenty to thirty or forty per cent of the leaves were badly browned and scorched.

Q. 28. Will you swear here that was done by the copper fumes?

A. To the best of my knowledge and belief. I am not an expert in pathology. If it was done by smoke I don't know what could have done it, no evidence of fire, no evidence of insects. There had been no fire so far as I could judge within three or four or five years, possibly longer.

Q. 29. It has been an exceedingly dry season*m* has it not?

A. Not since I have been here. I came here Friday at noon.

Q. 30. I am speaking about before last Friday, don't you know it has been an exceedingly dry season through this section here?

A. No sir, because I have been stationed at Etowah and I have not been in the State of Georgia since the 26th of May, 1913, except to go to Alaculsa, Georgia.

Q. 31. Don't you know there was hardly any rain during the whole summer season?

A. No sir. Mr. Clarke is the only person I have heard from here,

and he does not write me very often, nor does he write me about the weather conditions.

Q. 32. Is it not true that dry weather will cause the leaves to brown and look scorched?

A. Sometimes.

Q. 33. Don't you know you have seasons from time to time during particularly dry seasons, especially in the fall, that trees will give every appearance of having died from drought?

A. How late in the fall?

Q. 34. Well, from August, any time during the dry season?

A. From the end of August I wouldn't attempt to distinguish the orninary ripening color of the leaves, I wouldn't attempt to distinguish the natural appearance from the appearance that
84 resulted from drought.

Q. 35. Have you not seen quite a lot of timber give every evidence of being dead as a result of drought?

A. Not in this region, not in the Southern Appalachians.

Q. 36. Have you elsewhere?

A. Yes sir.

Q. 37. Where?

A. In Connecticut.

Q. 38. But I understand you to say you don't profess to be an expert in the poisoning of trees?

A. No sir.

Q. 39. This is the only opportunity you ever had for giving any attention to the ef-ect of sulphur fumes on forests?

A. No sir, I had one opportunity better than this.

Q. 40. When was that?

A. The last week in September of 1913, I made a trip with Dr. Hedgecock from Ducktown south down the Ocoee River to Parksville, on the Ocoee River.

Q. 41. I didn't really mean that, what I mean this is the only section in here you ever had opportunity to study the effects of sulphur fumes on foilage?

A. It is.

Q. 42. Now, you investigated more or less forests down in a limited part of North Georgia, I believe you say, outside of this zone of damage?

A. I was located on the river southeast of Blue Ridge twenty to thirty or thirty five miles.

Q. 43. Didn't you go through those forests and examine the trees to some extent?

A. Yes sir, that is what I was there for.

Q. 44. You found dead trees all through there?

A. A very few.

Q. 45. You found dead trees?

A. I found trees dead from old age.

Q. 46. You found trees that were dead, that hadn't died from old age?

A. I have no definite recollection of a single one.

Q. 47. You didn't find any dead trees on this trip?

A. Yes sir, found a good many white top trees, some of which were entirely dead, and others having the top killed out.

85 Q. 48. Those trees, you say, were killed in the top, spike top, have been that way six and eight years?

A. I don't know.

Q. 49. They presented every appearance of having been in that condition many years, didn't they?

A. I couldn't say whether it was done one year or ten years, only be a guess on my part, by examining the twigs. If the tops were decayed and the smaller twigs and limbs had dropped off, I would judge it had been deal longer than if it retained the smaller parts.

Q. 50. How can you testify as to when that damage was caused?

A. You mean the spike tops?

Q. 51. Yes sir.

A. In fact, I had not considered it, I might go out with that in view and make a guess at it, that is all I could do.

Q. 52. Now, in regard to the Inrement Borer, you don't undertake to say that is of no value at all in determining the growth of a tree, do you?

A. I consider it of very little value in America in the virgin forests, where we have what is called normal forests produced by planting of trees, where we have systematic and even chance, trees of that kind, the Intrement Borer would be used. But where trees are planted we would know the age of them.

Q. 53. Suppose you go through a particular part of the mountains and carefully select your trees, is there any reason why that tree does not grow with reasonable regularity all around?

A. If it has not been,— that will depend on condition of light, and the crowding by other trees.

Q. 54. Will not crowding over in Germany have the same effect as here?

A. Yes sir, but they are not crowded there.

Q. 55. How do you know?

A. They have been under improvements for three hundred years.

Q. 56. Have you seen one?

A. I have seen photographs.

Q. 57. How close do they grow together?

A. They start them, depending on the species, the spruce is four feet each way.

Q. 58. Don't you think that would be crowding the spruce?

A. Not when the spruce is ten inches high, when they

86 are planted.

Q. 59. They grow higher than that?

A. Yes sir, and as they grow they take out every other one.

Q. 60. Did you ever see any forests thicker than that?

A. Planted forests?

Q. 61. No, natural forests.

A. Yes sir.

Q. 62. Where?

A. In the Adirondack Mountains in New York State, and also in Maine and Mt. Mitchell, North Carolina.

Q. 63. They were extraordinary forests?

A. No sir, there had been a heavy seed crop with unusual favorable conditions for germination, came up as thick as they could grow.

Q. 64. I am asking about good sized trees?

A. Good sized species are twenty feet high. If you see forests of spruce growing closer than four feet to each other, I have seen them as close a- four feet.

Q. 65. Do you know as a matter of fact in Germany the forests they cultivate there, plant them just as close together as they can?

A. I do not, I beg to differe with you.

Q. 66. Don't you know they conserve their forests to the very greatest extent, and conserve their space as much as they can in the cultivation of their forests?

A. I don't agree with you at all, if you want to know what I know about it.

Q. 67. Well, what you know is hearsay?

A. I have seen photographs.

Q. 68. You didn't see them taken.

A. It is not probable they would fake that up.

Q. 69. Probably not, but you never was there and looked at the forests?

A. I have friends who have been there.

Q. 70. How many times did you ever use the borer, you say it is not of much value, let's find out whether it is or not?

A. I used one part of three days.

Q. 71. That is all the experience you ever had with it?

A. That is all.

Q. 72. And upon that you condemn it?

A. Yes sir, I do.

87 Q. 73. When the borer has been used for many, many years?

A. I have not used it many years. I don't condemn it in Germany. I never used it there.

Q. 74. Then you condemn it all over the United States because you used it in one place three and one half days?

A. I condemn its use in virgin forests in America.

Q. 75. Because it was unsatisfactory to you when you used it three and one half days?

A. I do.

Q. 76. You think that was sufficient experience for you to condemn anything as to its use?

A. As far as I was concerned it was.

Q. 77. Is that the way you do scientific work, you condemn anything when you use it three and one half days?

A. That was sufficient for me.

Q. 78. What was the trouble?

A. Just as I stated heretofore, the reason the growth is not regular and not systematic.

Q. 79. Tell me what you did with that borer during the three and one half days?

A. I probably took out fifty or sixty cores.

Q. 80. Did the cores show conditions that you found to be false?

A. I cannot say they did. For one thing I remember the instrument came to be mechanically defective, couldn't get the cores out with any certainty. We didn't get any cores more than two inches long.

Q. 81. Then you condemn it directly because you didn't get the core?

A. Partly that, partly mechanically defective and partly because the cores did not show average conditions in the stem.

Q. 82. Now, did you make a single experiment of this kind, take out a core and examine it and then cut the tree down and compare the cross section of the tree with the core, did you do that?

A. Yes sir.

Q. 83. How many times?

A. I think my party cut four or five trees.

Q. 84. Was there any difference between what you saw was shown by the core and that shown by the cross section?

A. The cross section at the point where the core was taken, of course, corresponded, but the other side did not.

88 Q. 85. In how many instances did that happen, that they didn't correspond elsewhere?

A. In a majority of cases, out of five trees cut, I would say four of them did not correspond, just about one tree out of five.

Q. 86. That is it showed accuracy of the relative growth where the core was taken out, is that so.

A. Yes sir.

Q. 87. But that tree had been growing irregularly, as I understand?

A. Bigger on some sides than on other.

Q. 88. But wouldn't the core taken out of either side have given exactly the same history of the relative growth for the same years?

A. No sir, not necessarily.

Q. 89. Did you look to see?

A. I saw that it didn't do so.

Q. 90. Will you swear here that the core taken from one side didn't agree so far as the relative growth of the years are concerned?

A. In some cases it did.

Q. 91. In how many cores did that occur?

A. I have no definite recollection. But I will say that it occurred in a majority of cases, in at least two out of the five.

Q. 92. So that those experiments that you have explained here, having cut down five trees and compared them with the borer, you condemned the borer?

A. That is my own personal knowledge. In addition to that I

have the information of other parties and that is the general conclusion arrived at.

By COUNSEL FOR DEFENDANT: We except to the witness' answer.

A. I had already answered it, I just want to furnish what he asked for, and nothing more.

Q. 93. You say that you are willing to swear with the limited knowledge that you have, that it is of no value at all?

A. In my estimate, I cannot form an opinion for other people, but to the best of my knowledge and belief it is not.

Q. 94. It is used in your work?

A. No sir, I have never seen it used, it may be used. I
89 have not been present when it has been used.

Q. 95. Then you don't know much about it.

A. The other method for determining the growth is much more accurate?

Q. 96. What is that?

A. The stem analysis.

Q. 97. What is that?

A. Cutting the tree near the ground and making sections at uniform distance, generally every eight feet.

Q. 98. But if you are trying to examine the timber on another man's land, you cannot do that?

A. In Pennsylvania we were able to do that because a man named Guinn was willing for us to do that. We were willing to pay him for cutting his timber, and so we did it. That is one case.

Q. 99. Is that the only case you ever knew of being pursued?

A. No sir.

Q. 100. Where else?

A. In Arkansas National Forests in Arkansas.

Q. 101. How did that happen?

A. Mr. James, who makes a specialty of that work was sent there to make some volume tables for different species, short leaf pine and also some oak. I didn't assist him, but saw him at work and knew what he was doing.

Q. 102. How many trees did he cut to the acre?

A. He got his information from Government timber sales, where the timber had been sold and was being cut by the mill men.

Q. 103. So those are two instances you have known of where that method was pursued?

A. Yes sir.

Q. 104. Is it not a fact that between here and Ducktown the lands have been cut entirely over, almost entirely, and the growth is nothing but sapplings.

A. Do you mean in Georgia or Tennessee?

Q. 105. In Georgia.

A. No sir, I wouldn't describe the conditions that way.

Q. 106. How would you describe it?

A. As culled forests, where the better trees have been culled out on most of the land, still a good deal of merchantable timber there.

Q. 107. Don't you know that for a distance of five or six miles from the State line that it has been nearly all cut out?

A. No sir, I don't know that.

90 Q. 108. How far has it been cut out?

A. I couldn't say.

Q. 109. Didn't you notice?

A. I noticed from the route we took through there, I would not describe it as cut over forest, which I call a culled forest, where the better species have been taken out, not virgin forest in any sense of the word. Neither is it what I would call a cut over forest. It does not compare with the cut over land of the Alaculsa Lumber Company and the Prendergast land.

Q. 110. For some distance this side of those furnaces, you know it is practically all cleaned off?

A. No matured trees, no trees of any kind except a few sprouts.

Q. 111. Do you know when that timber was cut?

A. I don't know it was ever cut at all, it is gone and that is all I know about it.

Q. 112. Do you know whether it was ever there or not?

A. Yes sir.

Q. 113. How do you know?

A. By the stumps.

Q. 114. Can you tell from the stumps whether it was cut or not?

A. No sir, they are too ragged. If cut many years, maybe several years, you couldn't tell whether it was burned down or rotted down, or whether the smelters had killed them.

Q. 115. Now, Mr. Johnson, suppose you take borings from a great number of trees in a vicinity, don't you think they would show more accurately the history of the growth of that forest than cross sections from just a few trees?

By COUNSEL FOR PLAINTIFF: We except to that question as there are no facts or evidence in this case on which to base the hypothetical question, being only three borings in evidence in this case.

Overruled. Appeal prayed and granted.

A. Please repeat the question.

Q. 116. (Stenographer repeats question.)

A. That is merely a hypothetical question.

91 Q. 117. I wan it answered that way.

A. Hypothetically I would say yes, that a great number of borings would be preferable to a few sections. I make my answer based on the hypothetical question.

Q. 118. I didn't ask you for anything else.

A. I qualify my answer that way then.

Redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. Mr. Johnson, state whether or not a number of sections would be preferable to a number of borings?

A. In my judgment a number of sections would be much more preferable than an equal number of borings.

Q. 2. Would they be preferable to a number of pieces of sections, such as the Exhibit I handed you a while ago?

A. You want to know if a complete section is preferable for that purpose?

Q. 3. Yes, sir.

A. It is.

Q. 4. Speaking of the land General Fowler asked you about between here and Ducktown, you stated that the appearance of the land, it had no timber on it, where is that land located?

A. I didn't say,—if he had reference to Georgia only,——

Q. 5. Are there not lands in Georgia that are absolutely denuded of timber, in this section of here?

A. I didn't see any except the land in cultivation, which is cleared for cultivation.

Q. 6. In lumbering it do they get all the timber from a place and absolutely denude it of all the timber?

A. Do you mean from a forest standpoint?

Q. 7. Yes, sir.

A. No, sir.

Q. 8. I believe you stated the forests in Georgia was not what you would call cut over forest, but culled forests?

A. The parts that we went over Friday and Saturday.

Q. 9. State whether or not you used the best methods in
92 the forest service, or what is supposed to be the best methods in arriving at your knowledge of forests and trees?

A. That question is so broad, if you could make it more specific.

Q. 10. With reference to the taking of borings and making examinations of trees, you use what you consider the best methods?

A. Yes, sir.

Q. 11. I believe you stated the method you used was the stem analysis?

A. Yes, sir.

Q. 12. Is that method in general use in the forest service?

A. So far as I know it is used more generally than any other.

Q. 13. You stated a while ago, I don't know whether it went in the record when asked whether or not,—if I am correct in my understanding of this part of your statement,—whether or not you condemned the Intrement Borer upon your personal experience, or from what you had heard and read?

A. Principally from my personal experience and from my observation.

Q. 14. With reference to the Intrement Borer—is it the rule or the exception for trees to be perfectly round and symmetrical in their growth?

A. Here in America it is the exception for forest trees to be symmetrical in form.

Q. 15. I will ask you to state whether or not as they grow in height and in breadth, they are thinned out, the growth rings?

A. They are thinned out, under the practice of foresters.

Q. 16. Now, with regard to the Wetmore lands, did you make an examination of them?

A. I assisted in the examination, had charge of it.

Q. 17. Have those lands been damaged or not by the copper fumes, in your opinion?

A. Certain parts of them have. There was a portion of the Wetmore lands which we are to acquire, some of them have been damaged, and others not. If they have been I cannot see it.

Q. 18. What direction are they from the Ducktown plant?

A. You mean the damaged lands?

Q. 19. The average direction of the entire tract?

93 A. Northwest, the center of the bulk would be northwest.

Q. 20. Are you familiar with the rainfall down in this section at all, the annual rainfall?

A. I have a weather bulletin,——

Q. 21. Do you know from your own knowledge?

A. No, sir, I never kept any record myself.

Recross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. Suppose the bark is off of the end of a boring taken from a tree, can you tell which is the inside end of the boring?

A. It would be difficult. There is, however, one way, in certain species—well, in all species.

Q. 2. How is that?

A. The summer wood which is formed during the latter part of the growing season is denser and different in color from the spring wood which grows in the early part of the growing season, and in most trees the demarkation between those two kinds of wood, that is, perhaps, the way it can be noticed, and it might be possible. I don't know that I can do it, to determine which end is which of different kinds of wood.

Q. 3. Can you always tell if you put it under a microscope, from the reasons you mention here?

A. A microscope would assist in that, I couldn't say it would determine positively though.

(Thereupon the further taking of testimony is adjourned until 9:30 o'clock tomorrow morning.)

(The taking of testimony resumed on this August 15th, 1914.)

JAMES F. TEEM, F. V., being sworn to speak the truth, the
94 whole truth and nothing but the truth, testified as follows:

Direct examination—Mr. DRAKE:

Q. —. How old are you, Mr. Teem?

A. I will be 72 years old the 20th day of next February.

Q. 2. Where do you live, and how long have you lived there?

A. In Gilmer County?

Q. 3. Yes?

A. I have been there—I am going on 72 years old, and I have been living there ever since I was seven years old. I come to that County, when I was seven years old.

Q. 4. In what part of Gilmer County do you live?

A. About six miles Southeast of Ellijay, sorter to the left of the railroad.

Q. 5. Is there a point or a post office out there near you by which that neighborhood is known?

A. Yes, sir, Yukon, Ga.

Q. 6. How long have you been living in that neighborhood?

A. I have been living right around there all the time. I have lived where I am now living about fifteen years. I have lived right around there within three miles of there——

Q. 7. How long have you been living in that settlement?

A. I have been living in that settlement ever since the war.

Q. 8. Are you thoroughly acquainted with that county, Gilmer County, generally?

A. Yes, sir, thoroughly acquainted with it.

Q. 9. Have you seen or smelled, or seen any sulphur smoke in that community within the last few years; if so, to what extent have you seen it?

A. I have see'd it ever since I have been up where I am now; I have seen it all the time along. It has been worse this year than it has been.

Q. 10. Have you observed the effects this year upon the forest trees?

A. Yes, sir.

Q. 11. If so, what kind of trees did you notice?

A. My fruit trees; that are just about half dead; the limbs, half of them are dead; they don't look like they are going to live long; I cut down a lots of them the other day.

95 Q. 12. I am speaking of forest trees, such as oak and that class of timber? Did you see any effects on them?

A. I have see'd hickory and chestnuts; the chestnuts is about all dead; there may be a few hickories that are not dead.

Q. 14. This year, have you seen any smoke in there?

A. Yes, sir, plenty of it.

Q. 15. How did it appear, and where was it?

A. It was on these mountains; Turniptown Mountain and then on Barnes mountain; it has been in there on the sides of the mountain.

Q. 16. Could you see it?

A. Yes, sir.

Q. 17. What sort of smoke is it?

A. It's a kind of blueish smoke.

Q. 18. Could you smell it?

A. Yes, sir.

Q. 19. How did it smell?

A. Like sulphur.

Q. 20. After it comes in there and settles down for a day or two and then the sun shines out and dispels the smoke and it leaves what is the effect on the trees?

A. The leaves sorter crisp up, on the oaks, the leaves dry up and fall off.

Q. 21. Can you describe how they look further than to say that they sorter crisp up?

A. They sorter crisp up, and turns kinder brown like sorter, and then they turn yellow and fall off.

Q. 22. What months this year did you notice smoke in there?

A. I have noticed it ever since along the first of May and April; it's been in there plum on up until now.

Q. 23. Did you see it in there in May?

A. Yes, sir, plum on up until now.

Q. 24. Do you see it every day?

A. Nearly every day, only sometimes when the wind comes from the South it blows back this way, and then I don't see it.

Q. 25. How have the winds been generally, this year?

A. The winds have been mostly from the North.

Q. 26. State whether or not the winds have been from the
96 North more this year than usually?

A. Yes, sir, more this year. It has been from the North this year more than I ever noticed it before.

Q. 27. How has the smoke this year, this sulphur smoke been this year as compared with the last few years?

A. It has been to my notice the worst this year I have ever noticed it.

Q. 28. How far are you from the Ducktown Copper Company, do you know where the Ducktown Copper Company's plant is?

A. I have been to McKay town, but I have never been there.

Q. 29. Do you know where Copperhill is?

A. No, sir, but I have been to McKay town.

Q. 30. Do you know how far that is from where you live?

A. No, sir, I don't know how far exactly it is.

Q. 31. Make an estimate of about how far it is?

A. I guess it is somewhere going on twenty-one or two miles.

Q. —. I believe you live six miles South from Ellijay?

A. Five and a quarter or six somewheres along there.

Q. 32. When this smoke comes in there and settles down on your apple trees, have you observed the effects, and if so, what were the effects?

A. When it settles down on the apple trees, the apples seem to get sorter scabby and fall off. The ground is covered with them.

Q. 33. Have you observed anything like that this year?

A. Every time it comes up through there it gets my trees.

Q. 34. After that smoke came up in there what was the appearance of your orchard—that your orchard you were speaking of?

A. Yes, sir.

Q. 35. What was the appearance of your orchard after this smoke would come in there?

A. The leaves would sorter crimp up and turn yellow.

Q. 36. Then the leaves fall off?

A. Yes, sir, they would fall off.

Q. 37. What percentage, I mean by that how many of the leaves have fallen off, if you know?

A. I don't know; there ain't many on the trees, but they have been falling off.

97 Q. 38. Would you say that one-fourth of the leaves had fallen off?

A. I don't know; I haven't noticed that far.

Q. 29. Are they falling off and turning yellow now?

A. Yes, sir, and the limbs look like they are dying.

Q. 40. Have you noticed the effects of this smoke on your garden truck, and if so what has been the effect of it?

A. The cabbage and tomatoes, and such as that is dying now and Irish potatoes. I ain't never got a mess out of two bushels I planted; the leaves are all falling off.

Q. 41. The bugs didn't eat the leaves off?

A. No, sir, I don't let the bugs get on them.

Q. 42. How did the leaves of your Irish potatoes appear before they fell off?

A. They sorter crimped up and then fell off.

Q. 43. Like the frost had struck them?

A. Yes, sir.

Q. 44. Was that or not good land?

A. Yes, sir, it was as good land as any man need want; real good land.

Q. 45. How much did you say you got out of two bushel planting?

A. I aint never got none yet, and I don't think by the looks of them that I will get any. Before the smoke come down in there I could make fifteen or twenty bushels of 'taters easy enough.

Q. 46. When did you observe this year the effect of the smoke on your potatoes?

A. 'Long when they come up about that high (indicating), about the 8th or 10th I think. I don't know exactly what time; I never paid no attention to it.

Q. 47. You never kept any dates?

A. No, sir.

Q. 48. Have you noticed the effects of it on your corn and peas?

A. Yes, sir, one of my sons planted a pea patch; maybe an acre or an acre and a half.

Q. 49. When?

A. Along in the Spring, and they was the prettiest peas I ever saw and then the smoke come down and killed them. They was all in bloom at that time.

98 Q. 50. How has it been for raising peas there for the last few years?

A. We raised a lot of peas before the smoke come down in there, but since it has been coming down in there, we ain't raised none worth anything.

Q. 51. Was that good land for peas before the smoke come in there?

A. Yes, sir, we could raise peas, wheat and rye. We have quit sowing *and* wheat and rye, because we can't raise it.

Q. 52. What has been the effect on your oats for the last few years?

A. I aint sowed none for the last two or three years. When the smoke commenced coming in there, I sowed wheat, rye and oats. The smoke will kill wheat in a day. It gets the oats hard. The oats was as light as straw.

Q. 53. Would or not that land have made good wheat if the smoke hadn't come in?

A. It always did before. Before that smoke come in there I would get one hundred and ninety bushels on the patch I planted, and since that I ain't made none worth anything.

Q. 54. Did you have any rye this year?

A. No, sir; wasn't no use in sowing it; couldn't make it.

Q. 55. I believe you said you had quit sowing oats?

A. Yes, sir, and quit sowing wheat.

Q. 56. On account of that smoke?

A. Yes, sir.

Q. 57. I don't believe you answered my question about the effect it has on corn?

A. The corn ain't growed off; it has just stood there and ain't growed off like it usually does.

Q. 58. What is the visible effect on corn?

A. It settles on the blades of the corn and turns it black; it will black your hands when you pull it; the fodder will be all black and black your hands.

Q. 59. What is the effect of the smoke on the corn as to its yield, etc.

A. It hasn't been yielding very much lately; I don't know exactly how much it will yield to the acre.

Q. 60. I will ask you if corn is not the most resistent crop
99 raised in this country; if the corn don't stand it better than the wheat, rye and oats?

A. Yes, sir.

Q. 61. You say that it changes the color of the fodder?

A. Yes, sir, it settles on the blades. When it first comes down it turns it white, and after it has been there a little bit it will turn it black.

Q. 62. Did you ever notice the effect on the tassels and the silks?

A. The silks turn black right straight.

Q. 63. What effect does it have on the tassels?

A. It sorter turns over and dry up.

Cross-examination by J. A. FOWLER:

Q. —. How long did you say you have lived in your country?

A. I have lived right around in that settlement ever since I was seven years old.

Q. —. I am not talking about the settlement, how long have you lived where you are now living?

A. Fifteen years.

Q. 3. Then you moved there in 1899?

A. I moved there—it has been fifteen years. I don't recollect what date I moved there, or the year.

Q. 4. You have lived in that immediate neighborhood for sixty years?

A. Yes, sir, I have been living in that settlement right around there ever since I was seven years old, and I am now going on seventy-two.

Q. 5. How far have you lived from Yukon during that time, for the last thirty years?

A. Where I first lived was about four miles from Yukon, and I have been right where I am now about two miles for the last fifteen years.

Q. 6. Have you lived within four miles of Yukon for the last 50 years?

A. Yes, sir.

Q. 7. In what direction from Yukon?

A. Where I first lived was Southwest and now it's a little grain Southeast, about three miles.

Q. 8. Will you tell me in what year you first noticed the smoke in there?

A. No, sir, I can't tell you that.

100 Q. 9. Has it been thirty years ago?

A. No, sir, not that long.

Q. 10. Tell me please, the first time you noticed it in there?

A. I reckon it was about three years ago that I first noticed it.

Q. 11. Do you swear that you never noticed the smoke in there until about three years ago?

A. If I did, I didn't know it was the Ducktown smoke.

Q. 12. You didn't notice anything back more than three years ago?

A. I don't believe I did.

Q. 13. Did you ever smell any back more than three years ago?

A. No, sir, I don't recollect that I have.

Q. 14. You can't swear that you did or not notice it?

A. No, sir. I don't know as I did.

Q. 15. Then it was in 1911 when you first noticed smoke in there?

A. 1911?

Q. 16. Yes, three years ago.

A. It was about three years ago that I first noticed or hearing about it.

Q. 17. Prior to that time, you hadn't noticed any trouble in your neighborhood from smoke?

A. There wasn't none that I recollect of.

Q. 18. No trouble with your corn more than three years ago, was there?

A. I don't — that there was.

Q. —. No trouble with your Irish potatoes more than three years ago?

A. No, sir.

Q. 20. No trouble with anything that grew in your gardens more than three years ago; that's true is it?

A. I don't recollect of anything bothering it.

It is agreed that it is by air line 26½ miles from Copperhill to Yukon, and 28¾ miles air line from Isabella.

Q. 21. What was it that you first noticed?
A. About the smoke?
Q. 22. Yes.
A. I first noticed it coming in there and I could smell it when the air set from the North.
Q. 23. That was 1911, what month?
A. I don't recollect what month it was.
101 Q. 24. What did it first effect?
A. It first affected the green wheat and rye and corn.
Q. 25. Which one did you first notice it on, the corn, wheat or rye?
A. Wheat and wheat and oats first year; and the weeds; it killed the weeds in spots.
Q. 26. Can you tell me what time of the year that was——
A. No sir, I can't. I don't try to recollect everything. If I had knowed it I could have done it.
Q. 27. When did you notice it in the corn?
A. It was in the fall. It killed it after the corn was cut off.
Q. 28. That was 1911, three years ago?
A. Yes sir, somewhere along about four years ago.
Q. 29. That was in the fall of 1910, then?
A. Yes sir.
Q. 30. Really then the first you ever noticed it in there was in the fall of 1910?
A. Yes sir, along then. I noticed the weeds being killed about then.
Q. 31. Did you trace that smoke to see where it come from?
A. Yes sir, it come from the North; it come that way every time the wind set from the North.
Q. 32. How far did you trace it from the North?
A. I didn't trace it no way; I just see'd it coming. I didn't follow it up to see which way it come from.
Q. 33. Taking the year 1910, how many times did you see it in there; see it every day?
A. No sir, not every day. I would see it nearly every week. I didn't pay much attention to it.
Q. 34. How much damage did you see that you are certain was the result of that smoke in 1910?
A. I couldn't tell you exactly, but all the chestnut and hickory trees are dying.
Q. 35. Kill all your trees in 1910?
A. I don't know that it killed the mall in that year.
Q. 36. Killed all of them?
A. Yes sir; if there is a living chestnut tree I don't know
102 it.
Q. 37. You think the smoke did that?
A. I don't know what else done it.
Q. 38. Have you examined thre trees?
A. No sir.
Q. 39. Do you know anything about this fungus disease Dr. Hedgecock swears about?

A. No sir.
Q. 40. Have you dug up any chestnuts to see if they had any disease in the roots?
A. No sir, I haven't worked in the chestnut business.
Q. 41. As a matter of fact you don't know what killed your chestnuts?
A. I don't know exactly what done it, but I believe what done it; I never knowed none of them to die before then.
Q. 42. In regard to these potatoes, you say you raised fifteen or twenty bushels?
A. Yes sir.
Q. 43. When did you do that?
A. About four years ago.
Q. 44. Say three years ago, how many bushels did you get off of that patch?
A. Fifteen or twenty.
Q. 45. That was 1911?
A. Yes sir.
Q. 46. Three years ago?
A. Yes sir.
Q. 47. Two years ago, how many bushels did you raise?
A. I don't know how many bushels I raised.
Q. 48. I am talking about 1912, how many did you get in 1912?
A. I don't recollect how many I got, but not many.
Q. 49. Did you raise ten bushels?
A. I don't know whether I did or not.
Q. 50. Ever have any bugs on them or not?
A. I don't know, I don't think there was; whenever the bugs commence on my 'taters I kill them
Q. 51. Didn't sometimes the bugs get the lead?
A. No sir, I didn't let them do that.
Q. 52. Watched them day and night?
A. No sir, I watched them in the day.
Q. 53. Isn't the night the time they work?
A. They work night and day.
Q. 54. You never saw any work in the day, did you?
A. Of course they do. We have some bugs that work night and day.
103 Q. 55. Do you swear that a bug does his work in the day?
A. No I won't swear that he does, but I think he does work in the day; anyway that's what I think about it.
Q. 56. What about your beans two years ago?
A. I never raised no beans at all two years ago.
Q. 57. That was last year wasn't it?
A. Last year, and the year before that.
Q. 58. What was the matter with the beans?
A. They was scabby.
Q. 59. How long have your beans been scabby?
A. They've been scabby three or four years.
Q. 60. What caused that, do you know?
A. I think it's the smoke.

Q. 61. Do you know whether it is or not?
A. I am satisfied that it is. I have see'd beans before this.
Q. 62. Didn't you see them have scabs?
A. I never did like they have them now.
Q. 63. Wasn't quite so bad?
A. No sir.
Q. 64. Did they ever have scabs?
A. No. Sometimes the beans would get down on the ground, but it wasn't scabbed up that way.
Q. 65. Going back to potatoes, how many did you raise last year?
A. I didn't measure them.
Q. 66. Give us a guess as to how many you raised last year?
A. I guess I made six bushels last year.
Q. 67. Get any this year?
A. I haven't yet, and I'm satisfied I won't.
Q. 68. Have you examined the ground to see if there is anything wrong with the potato ground?
A. No sir.
Q. 69. How long have you been planting that ground in potatoes?
A. I have planted it for three years or maybe four.
Q. 70. And four years ago you made fifteen bushels?
A. Yes sir, fifteen or twenty.
Q. 71. Every year you are planting it in potatoes and not
104 putting something else in it, and your crop gets poorer?
A. It is getting poorer.
Q. 72. Every year they are decreasing?
A. Yes sir, they have been for two or three years.
Q. 73. You don't know what is the matter with these vines do you?
A. No sir, I don't know, but I am satisfied that it is this smoke.
Q. 74. Smoke from these furnaces twenty-four and twenty-seven miles away?
A. Yes sir, it does, and if you don't believe it you come down there and I'll show you. I wish you would come and see it.
Q. 75. Talking about your fruit trees, did you ever see an apple tree that had the scales?
A. Yes sir, I have never seen them with it.
Q. 76. Your orchard died with the scale didn't it?
A. No sir; some of the trees might.
Q. 77. Don't you know that your apple orchard is dying with the scale?
A. No sir.
Q. 78. You have seen the scale disease, diseased trees?
A. No sir, I never did see that disease.
Q. 79. Will you swear that your orchard has not got the scale and got it badly?
A. No sir, I wouldn't swear it didn't have nothing.
Q. 80. When did your apples first die, in what year?
A. They commenced to drop off about three years ago; they didn't stay on the trees until they got ripe. When I bought the place there

was a few trees there then, and them apples stayed on the trees until Christmas; they would stay on the trees until Christmas; now, they don't hang on until they get ripe.

Q. 81. How many apple trees have you?

A. I had about four hundred before they commenced to die.

Q. 82. How many of them are dead?

A. I don't know.

Q. 83. Half of your apple trees dead?

A. Half of them are not bearing.

Q. 84. And you think the smoke did that?

A. Yes sir.

Q. 85. What year did they begin to die?

A. Three years ago, or four.

Q. 86. Didn't they begin to die four years ago?

A. No sir, I don't think so.

105 Q. 87. As a matter of fact, didn't some of them die five years ago?

A. No sir.

Q. 88. How old are they?

A. Seven or eight years old.

Q. 89. You have never had any scientist or expert to go and examine your orchard and see what the trouble was?

A. No sir, I thought I was expert enough to know.

Q. 90. St-ll you don't know anything about that scale?

A. I know what they call scales.

Q. 91. You haven't had your apple orchard sprayed?

A. No sir.

Q. 92. You got any peach trees?

A. Yes sir.

Q. 93. What about your peach trees?

A. Some of them ain't no good.

Q. 94. They killed too?

A. No, I don't know as they are killed, but it don't seem like they are doing any good.

Q. 95. How do they look?

A. Some of them has got some peaches on them.

Q. 96. Speaking about your corn turning black and getting smut all over your hands?

A. Yes sir.

Q. 97. When did that happen?

A. Three or four years ago.

Q. 98. You know what smut is in corn?

A. Yes sir.

Q. 99. That's what's the matter with your corn, ain't it—it's got smut.

A. No sir; of course corn always has some smut on it; I have found that in corn all my life.

Q. 100. You are now about half the distance between your place and Copperhill; that is it's about half as far to Blue Ridge where your deposition is being taken, as it is to Youkon?

A. I guess it's nearer to Copperhill than it is to my house?

Q. 101. You are now right in sight of a corn patch?
A. Yes sir, I can see one. I noticed it when I come up.
Q. 102. You don't see anything wrong with that do you?
A. I ain't noticed it close enough to tell. I never examined it.
Q. 103. How does your corn look this year?
A. It don't look good; it didn't grow off like it ought to.
106 Q. 104. When did it begin to show that it was stunted in its growth?
A. It was along in May, and along in June, all the way through.
Q. 105. You have had an exceedingly dry summer, haven't you?
A. No sir, we ain't had much drouth; we had showers all along.
Q. 106. Here in Blue Ridge, do you find anything wrong with the vegetation?
A. I haven't noticed it, haven't examined it at all.
Q. 107. Have you been filing any claims to obtain damages out of the fund paid by the Tennessee Copper Company?
A. I filed a claim this year, is all the claim I filed. If they will quit the smoke I won't never ask for any damages.
Q. 108. You have filed one this year?
A. Yes sir.
Q. 109. How much damages you claiming this year?
A. I was claiming four years back—$800.00.
Q. 110. Claiming it for four years back.
A. Yes sir.
Q. 111. When did you file that claim?
A. 'Long back in the Spring like.
Q. 112. You mean you have brought suit?
A. Yes sir.
Q. 113. Before whom?
A. I laid in a claim.
Q. 114. You give it to some lawyers?
A. Yes sir, a young little lawyer in Ellijay.
Q. 115. And who is this little lawyer's name you filed that claim with?
A. I believe it's that gentleman there. (Points to Mr. Hill). I am not sure.

Mr. Hill: He has reference to Evans, Spence and Moore of Atlanta.

Q. 116. Didn't Mr. Shippen have you brought up here?
A. No sir.
Q. 120. You ever talked with Mr. Shippen about the case?
A. No sir, I never talked with Mr. Shippen in my life.
Q. 121. How about Mr. Frank Shippen?
A. I may have talked with him about it, but I don't think I have ever talked any serious talk about it.

Mr. Drake: We except to the question and answer as being
107 immaterial and irrelevant to the issue, and as being an attempt to reflect upon the State of Georgia.

Q. 122. Who was it that came to you and talked to you about becoming a witness up here?

A. That gentleman right there, Mr. J. A. Drake. Mr. Drake's a big lawyer.

Redirect examination.

By Mr. DRAKE:

Q. 1. General Fowler asked you about smut in corn; I will ask you if smut in corn doesn't affect the ear and make it puff up in the fall of the year?

A. Yes sir, it gets into the corn and it commences swelling.

Q. 2. It doesn't affect the blades?

A. No sir, it don't affect the blades.

Mileage of witness 47 miles.

J. H. CLONTS, after being duly sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination.

By Mr. DRAKE:

Q. 1. Where do you live, Mr. Clonts?

A. I live in Gilmer County.

Q. 2. What part of the county.

A. In the Eastern part from Ellijay, about six miles.

Q. 3. How far from Ellijay; in what neighborhood?

A. In what is called Turnip Town creek.

Q. 4. How far are you, Mr. Clonts, from Turnip Town?

A. I am right in what is called Turnip Town mountain.

Q. 5. How old are you, and what is your profession or occupation?

A. My age is about forty years; I don't know my age exactly. I follow farming mostly.

Q. 6. How long have you been living where you are living at the present time?

A. I have been living there about eighteen years; right there and in about a half mile from there.

108 Q. 7. What kind of crops do you grow from year to year.

A. I grow potatoes; each kind, sweet and irish; I grow corn; oats; cabbage, and such stuff as that. We try to grow oats, but we don't grow none; the smoke ruins them so they won't make.

Q. 8. Have you any fruit trees on your farm?

A. Yes sir.

Q. 9. State whether or not there are orchards of considerable extent over there in your neighborhood; if so, whose?

A. Yes sir; there is Mr. Arnold's and Mr. Northcut's; they have several thousand trees. Then there is one on the place I used to own.

Q. 10. What about the extent of the orchards, I mean how big orchards are they?

A. Mine runs about 500 trees, and these others run up in the thousands; I don't know how many thousands they have got.

Q. 11. If you have observed any smoke in there in the last few years, state about what kind of smoke it was?

A. This smoke in there is what they call the Ducktown smoke. When the wind comes in from the North it comes towards us; comes rolling in there like the woods was afire, and comes in and drops in your fields, and when it comes over and drops in there you can smell it. After it comes in there, in a day or two you can see it on the leaves of the trees; dries up the leaves.

Q. 12. What is the color of that smoke?

A. The color of the smoke? It is a blue looking smoke after it gets down in there.

Q. 13. You can see it, and I believe you say you can smell it?

A. Yes sir.

Q. 14. How does it smell?

A. It smells kinder like sulphur.

Q. 15. Have you ever been up around the plants at Ducktown or Copper Hill?

A. Yes sir, I have been at Copper Hill.

Q. 16. Did you smell the smoke when you went up there?

A. Yes sir, it is strong there around the works.

Q. 17. Is the smoke that you smell down there at your place on the occasions you mention the same kind of smoke?

A. Yes sir, the same thing.

Q. 18. When did you first commence seeing the smoke down in that neighborhood?

109 A. The first time I remember seeing so much of it come all at once was somewheres about eight or ten years ago when so much of it begun to come in there.

Q. 19. Let us get down to the year 1914, this year, when was the first appearance of the smoke this year?

A. I don't know positive what dates it was, but it was about the first of May.

Q. 20. After the first of May how frequently did you see it in there?

A. I can't say every day; it come in there frequently; day after day. I range cattle in the mountains, and I would go up there often, and you could go up on them mountains and see it boiling in down there out of the works when the wind comes in from the North. When the wind is going North you can see up there, but when it is coming South you can't see up there.

Q. 21. What obstructs your view when the wind is blowing towards the south?

A. That smoke.

Q. 22. When the wind is blowing towards Tennessee you can stand on the mountain and see it?

A. Yes sir, see it plain as rolling out of a locomotive here.

Q. 23. What mountain can you stand on and see that?

A. Aron Mountain, right up towards what is called the Bald.

Q. 24. In what part of Gilmer County is these mountains?

A. In what is called the Turnip Town section.

Q. 25. What were the visible effects on vegetation, on your

crops, on the foliage of the timber and on the weeds after that smoke would come down in there?

A. It crimps up the leaves and spots them all around, them and the 'taters; they turn kinder brown and they will stay there until they rot when they are killed that way.

Q. 26. You mean that the leaves are killed?

A. Yes sir.

Q. 27. And you mean that the potatoes are killed?

A. Yes sir, and it gets the peas; when they get pretty bad hit they shed their leaves, and also a young crop of peas fail. I have seen them drop off that long (indicating).

Q. 28. How many days after the smoke would come in there until you would notice peas as long as your finger which you say you saw fall off?

A. In three or four days I would notice it.

Q. 29. This year, have you seen any of the effects of the smoke on the forests in your neighborhood?

A. Yes sir, I have saw it all down there on the creek and back there in the mountains.

Q. 30. What kind of trees did you see that were affected?

A. Chestnut Oaks; Black Oaks, and all kinds.

Q. 31. What varieties have you observed that it affects the worst?

A. Chestnut Oak I believe it hurts worse than any other kind of oak.

Q. 32. Than any other kind of oak?

A. Yes sir, I believe it does.

Q. 33. What of your garden crops and garden stuff does it hurt the worst?

A. Take the beans, I believe it hurts them, and young peas worse than anything in the garden.

Q. 34. Has it affected your beans and peas this year; and if so to what extent?

A. The first cropping of them when the smoke come in there about the first of June they all shedded?

Q. 35. Shedded the leaves?

A. Yes sir, and blooms. Beans, you know bloom and bear too; they shedded.

Q 36. What was the effect on your crop of beans?

A. The effect was that I won't get a full crop of beans.

Q. 37. You won't get a full crop of beans?

A. No sir.

Q. 38. Please describe the condition they are in?

A. Nothing like as good as usual; they are all spotted; kinder brown with spots on them.

Q. 39. Before the smoke came into that neighborhood what kind did you raise?

A. We raised them mighty fine nearly every year; everything.

Q. 40. If you have observed the smoke in there on them orchards this year, tell when it was, the condition of the orchard when

it come in, whether there was any fruit on it, and how it af-
111 fected it

A. I was over there a good deal; I live right close there and I could see the orchard and it was thrifty and growing right along; the trees was full bloomed, and it looked like they would get a pretty good crop of apples, and I was over there after that; after this smoke come in there, and the leaves turned a brown color on the edges and crimped up, and the little apples didn't grow any more, just like they done down home, though it's worser on that mountain on the North; more effects of this smoke than on me. I am down in the valley kinder, and it don't get me so bad.

Q. 41. These orchards that face towards Ducktown on the North of the mountain, what was the condition of the apples after this smoke struck them?

A. They was pretty and nice, and this fellow up there he has gone on and spent a lot of money spraying up his orchard and is working it up to date, and they was nice and pretty.

Q. 42. After this smoke struck them what shape were they in?

A. About how?

Q. 43. What were the effects?

A. Just about like I told you them leaves all turned up and turned brown; they stopped growing, didn't grow any more and the apples fell off.

Q. 44. To what extent did the apples fall off?

A. I would say about half.

Q. 45. What month did they fall off in?

A. I believe it was along in June.

Q. 46. Do you know how long ago; it hasn't been in the last few days has it?

A. No sir.

Q. 47. How long before you saw these apples fall off, you say that you saw them in a healthy and fine condition?

A. I saw them in bloom, and I saw them when they was about as big as the end of my thumb.

Q. 47. Were they healthy, fine looking apples?

A. Yes sir.

Q. 48. How long after that was it that you saw them brown and parched and falling off?

A. I don't know positively how many days; not so powerful long tho'.

112 Q. 49. As much as ten or fifteen days?

A. Yes sir, I guess it was.

Q. 50. In the mean time had there been smoke in there, and if so to what extent?

—. ——.

Q. 51. It has been in there more this year than it has been before; it seems like the wind comes from the North more, and when it does it comes in there. I wouldn't say that it come in every day; I think there was some of the days that it went back North.

Q. 52. Last year how was the smoke?

A. There was a right smart last year, but it never hurt us so bad last year as it did this year.

Q. 53. How have the prevailing winds been this year?

A. They have been coming from the North.

Q. 54. When you went on these mountains which you have described where you say that you can see the smoke boiling up from these plants. I will ask you if you could observe the two plants at Ducktown?

A. Yes sir, you can see them both whenever the smoke is going the other way.

Q. 55. Can you tell the two volumes of smoke as they rise up into the air?

A. Yes sir. They get together. You can watch them. It takes like five or six miles for them to get together, and the whole elements are dark back in there.

Q. 56. You can for a good distance distinguish the two volumes of smoke by sight?

A. Yes sir.

Cross-examination by J. A. FOWLER:

Q. —. How many acres of land do you own in there.

A. Something like 200 acres and over.

Q. 2. How much do you cultivate?

A. About thirty acres.

Q. 3. The remainder of it timber lands?

A. Yes sir.

Q. 4. What kinds of timber grow there?

A. Mighty near all kinds; poplar, chestnut, oak, black oak, white oak, and pine.

Q. 5. Have you sold any of it?

A. Not recently, I ain't.

113 Q. 6. Have you ever sold any?

A. Yes sir.

Q. 7. How long ago?

A. I sold a little of it last winter.

Q. 8. That was cut and taken off?

A. Yes sir.

Q. 9. Who did you sell it to?

A. I had it sawed and sold the lumber to Mr. Shippens.

Q. 10. When did you buy that land?

A. I can't tell you now when I bought it. I have had some of it I wouldn't say positively how many years,—about ten or twelve years.

Q. 11. How long have you lived up there?

A. About eighteen years.

Q. 12. At the same place?

A. Within half a mile of the same place.

Q. 13. The first time you noticed any smoke up there was eight or ten years ago?

A. Yes sir.

Q. 14. Do you recollect what called your attention to it, smelling it and seeing what it was?
A. Yes sir, I think I do.
Q. 15. Was it about the same time that the high stack was built?
A. I don't know who it was that built the high stack.
Q. 16. You know don't you that it commenced coming to your place when that copper company stack was built?
A. Yes sir, and some before.
Q. 17. How long before.
A. I don't know.
Q. 18. Don't you have any idea?
A. Well sir, it was in there some three or four or five years before that. I noticed it ever since I been in there. You can see it on the top of that high mountain in there any time.
Q. 19. You can climb to the top of that high mountain and look North and see it?
A. Yes sir.
Q. 20. You say you know the furnaces?
A. I can see their stacks.
Q. 21. See both at once?
A. No, one.
Q. 22. You can see the high stack of the Tennessee Copper Company?
A. Yes sir, I have seen one.
Q. 23. You can see it over twenty miles of country?
A. I expect I can see further than that.
114 Q. 24. You didn't see any smoke in your neighborhood until the high stack went up?
A. Yes sir, I think I did.
Q. 25. Do you know?
A. Yes sir.
Q. 26. Why did you say you think?
A. I guess it was after that stack went up.
Q. 27. You didn't notice it before that?
A. Yes sir, we noticed it before that.
Q. 28. It didn't hurt anything did it?
A. It didn't hurt us as bad.
Q. 29. Did it hurt anything at all?
A. Yes sir; it hurt the timber just like it hurts it now.
Q. 30. Didn't hurt any chestnut trees before that?
A. Yes sir, the chestnut commenced to die in the tops.
Q. 31. Do you know what killed it?
A. No sir, I don't know.
Q. 32. Don't you know that chestnut and chestnut oak are dying in other mountains?
A. Yes sir.
Q. 33. Forty and fifty miles away from these stacks?
A. No sir.
Q. 34. Have you been that far away through the mountains?
A. No sir.

Q. 35. You don't know what is killing your timber down there where you live, do you?

A. We claim that it is the smoke; it hurts our other stuff.

Q. 36. Any way, you heard no complaint in that neighborhood until the high stack went up?

A. No sir.

Q. 37. Wasn't the smoke worse in 1906, 1907 and 1908, just after that stack was constructed than any other time, for two or three years, than it has ever been?

A. No, I don't believe that. This year it has hurt us worse than any year.

Q. 38. I mean, wasn't it worse for two or three years after the high stack was put up than any other time except this year?

A. It has been bad all along; I don't know it was worse
115 then. We know it was worse than it was before it was put up.

Q. 39. Wasn't it worse in 1906, 1907, 1908 than it was last year?

A. I don't know that it was. Of course, we have been hurt so much——

Q. 40. What did you lose last year; what crops did you have that suffered loss?

A. When we didn't have nothing to knock us back, I would make 100 bushels of peas.

Q. 41. When did you make 100 bushels of peas?

A. Two or three years back.

Q. 42. In what year was it that you made 100 bushels of peas?

A. Two or three years back.

Q. 43. Well then, the smoke wasn't so bad that year as it has been?

A. No sir, it didn't hit us so hard. It seems like when we have rain, like today, and the smoke comes down in there like tomorrow, then it seems to hurt us worser than any other time.

Q. 44. Was your peas hurt last year?

A. Yes sir.

Q. 45. Year before last?

O. Yes sir, some, but not as bad as last year.

Q. 46. The year before that?

A. The year before that they wasn't hurt as much as they have been.

Q. 47. Was your oats and wheat hurt last year?

A. I didn't have none to hurt.

Q. 48. Your corn hurt last year?

A. Yes sir.

Q. 49. How much corn do you raise per acre?

A. I didn't raise all years alike.

Q. 50. You have been cultivating your lands in corn every year, some of it?

A. Yes sir, and broad cast it in manure.

Q. 51. It didn't make corn as well as it did when it was fresh, did it?

A. I never put it in corn when it was fresh.

Q. 52. You have been cultivating it in corn right straight along haven't you?

A. Not every year.

Q. 53. Still you expect it to raise the same quantity of corn every year?

A. If it could I would.

Q. 54. In regard to these fruit trees, I believe you say you have 500?

116 A. Yes sir. Part of them is not bearing.

Q. 55. How about your apple crop last year?

A. I had some trees that had a very good crop.

Q. 56. Hasn't it been your experience all your life that some years you will get a good crop of apples on some trees, and other years you won't?

A. I don't know; I never paid much attention to it.

Q. 57. You have been familiar with apple crops in North Georgia ever since you were a boy, haven't you?

A. No sir, I have been here only eighteen years.

Q. 58. Don't you know that for many years your apple crops fail entirely regardless of smoke?

A. No I don't know that.

Q. 59. Wasn't that your experience before any smoke ever came in your neighborhood?

A. No sir.

Q. 60. Do you mean to say that the apple crop never failed in North Georgia?

A. No sir.

Q. 61. Don't you know that from some cause apples will fall off prematurely?

A. I don't know about that.

Q. 62. Didn't you ever see apples do that before?

A. No sir; I never experienced none in my orchards until I moved up in that country.

Q. 63. You sprayed your trees?

A. Yes sir.

Q. 64. This year?

A. Yes sir.

Q. 65. What with?

A. With arsenic and lead?

Q. 66. That is a violent *position* isn't it?

A. Yes, but you see not very much goes in.

Q. 67. Not much sulphuric acid gets in the smoke does there?

A. I don't know; something it does though.

Q. 68. Don't you know that that stuff you sprayed your trees with is a very violent poison and will kill the trees if you put too much on?

A. Yes sir, if you put too much of the poison stuff on it would.

Q. 69. Have you never sprayed a tree and saw the tree killed?

A. No sir.

Q. 70. How often have you sprayed them?

A. Twice this year with arsenic and lead mixed. So much of one and so much of the other.

117 Q. 71. When did you do that spraying?

A. Done it 'long, I believe in April one of the sprayings.

Q. 72. After the leaves come out?

A. Yes sir.

Q. 73. After they were in bloom?

A. Just as they begun to close up, I sprayed them.

Q. 74. What diseases do you have in your neighborhood?

A. I don't know as I can tell you.

Q. 75. What diseases do they claim to have in there?

A. I don't know, some says one thing and some says another.

Q. 76. Do you know whether or not they have got a disease?

A. I don't know. I heard that some was, but I don't know.

Q. 77. Isn't it a fact that it is your understanding that your orchards have a great deal of scale, and that is what they have got?

A. Some do spray sometimes for that.

Q. 78. Isn't that what you are spraying for?

A. I sprayed one time for that, but I ain't got none there in my orchard.

Q. 79. You know what the scale is, don't you?

A. I don't know only what the other fellows says; I am not experienced in that.

Q. 80. Still you claim to know what it is?

A. All the experience I ever had is that it will show on the apple and shows on the trees; that it will show on the outside of the apple before it will show in the tree.

Q. 81. Don't your experience tell you that your trees give the appearance of being diseased in some way?

A. I don't know. I have got some trees that looks better than others.

Q. 82. Got any with the limbs looking rough?

A. Not that I remember. Down at the bottom there is rough bark like is usually there on the trees.

Q. 83. Do you know these gentlemen who have had their orchard sprayed?

A. Yes sir.

Q. 84. What kind of spray did he use?

A. I am not acquainted with it. I got his receipt and sprayed my orchard. We sprayed first one way and then another.

118 Q. 85. Did he spray at the same time?

A. Yes sir, all sprayed at the same time.

Q. 86. This the first year you all sprayed?

A. No sir.

Q. 87. Spray last year?

A. Yes sir.

Q. 68. That the first these orchards have been sprayed?

A. No sir; Mr. Arnold and Mr. Northcutt sprayed all along.

Q. 89. So these gentlemen on the South side of the mountain had disease in their orchards?

A. I don't know about that; they claimed that some kind of an insect or something was biting the apple.

Q. 90. You don't raise peaches?

A. No sir, I ain't got no peaches, but I have got some young trees.

Q. 91. Have you filed a claim to be paid damages out of the fund paid by the Tennessee Copper Company?

A. Yes sir.

Q. 92. How much damages did you claim?

A. I don't know what it is now.

Q. 93. How much have you been damaged?

A. I can't say, how much I have been damaged.

Q. 94. How much did you claim to have been damaged, you have to state some amount, I take it, in your application?

A. I just don't remember point blank the way we do. We can claim so much on the whole thing for a year.

Q. 95. You don't remember how much you claim you were damaged this year?

A. I don't remember point blank, but it seems like I give it in at $100.

Q. 96. For this year, how much for last year?

A. I didn't give any for last year; it is for the years back.

Q. 97. You mean that you have been damaged $100 altogether ever since that smoke came in there?

A. $100 a year; I wouldn't say positively that's the amount, but I think it is.

Q. 98. How many years do you claim that you are entitled to be paid for that?

A. To get justice I ought to have pay for every year.

Q. 99. You have had this farm for how many years?

A. I have had it there about sixteen years.

Q. 100. Then you think you ought to have $1,600?

A. To get justice and right I think I ought.

119 Q. 101. Still you say the smoke has been coming in there only eight or ten years?

A. It has been coming in there every year since I have been there. We didn't know what it was, to say that it was Ducktown smoke, but at the same time I have been in the forest lots and we have lost timber out of there.

Q. 102. I believe you stated that there was no complaint about the smoke until this high stack was put in;

A. None that I know of; nothing like making any suits.

Q. 103. You are hoping to get $1,600 out of that fund?

A. No sir.

Q. 104. How much do you think you will get?

A. I don't know; I really don't know whether I will get anything.

Mr. DRAKE: It is agreed by counsel for State and defendants that witness lives 21¼ miles, air line, in a nearly due South direction from the Ducktown, Sulphur, Copper Company, and 18½ miles from the Tennessee Copper Company.

Redirect examination by Mr. DRAKE:

Q. 1. You spoke about having put in a claim, I will ask you whether or not the claim you speak of was not put in with Evans & Spencer?

A. Yes sir.

Q. 2. You haven't filed any claim with this board of arbitrators for the State and the Tennessee Copper Company?

A. No sir.

Q. 3. You were asked about spraying trees, I will ask you if the formula that you used is one that is recognized by fruit experts to be proper, and whether you used it as recommended?

A. Yes sir. You put in so many gallons of water to so many pints of that and use it that way. It is fixed up all ready to use.

Q. 4. I will ask you as to whether or not it — intended to keep off the insects, if that is the purpose?

A. Yes sir.

Q. 5. I will ask you whether or not when you sprayed for that scale you used an entirely different preparation?

A. Yes sir. We put that on in the winter time.

120 Q. 6. You put that on when there is no young foliage, and is an entirely different treatment from the one you described to General Fowler?

A. Yes sir, we make that a whole lot stronger.

Q. 7. I will ask you whether or not the spray you used for the scale is not a sulphur and lime preparation, or do you know what goes into that?

A. No sir.

Q. 8. It is stronger than the other kind you use, you know that?

A. Yes sir. Yon put the same stuff, I think, but you put it in stronger for the scale, they claim——

Q. 9. You had already used this spray which you were speaking of when the bloom was just closing up?

A. Yes sir.

Q. 10. And it didn't make the apples fall off?

A. No sir.

Q. 11. Then it was the smoke that come down in there and crimped up the leaves and the apples fell off?

A. Yes sir.

Q. 12. Is there any fruit left on these trees?

A. Yes sir, there is some.

Q. 13. What part of the tree is it that the fruit seems to fall from worst?

A. It is generally the south side of the tree that seems to be the *the* worst.

Q. 14. As to the top and bottom of the trees?

A. Sometimes it hurt them at the top more than the bottom, and then at the top, and sometimes the North side of the tree more than on the South side.

Q. 15. You don't pretend to be any expert on the diseases of trees?

A. Nor sir.

Q. 16. All that you state about the injury to fruit is what you have actually seen?

A. Yes sir, what I have seen.

Q. 17. And smelled?

A. Yes sir.

Q. 18. Have you observed any particular localities in your neighborhood that this smoke boils through worse when the wind is from the North?

A. I have. Back up in the coves there. I have noticed that when the wind is from the North I have noticed that it comes boiling through there like the woods is afire, and it gets into them fields there and spreads out on it. I have got a little house up
121 there, and I seen the smoke in there one day, and I said——

Q. 19. Don't tell what you said?

A. Well I saw the smoke boiling up through there in the gap and I thought that house was on fire, and I watched it there until way up in the night.

Q. 20. Could you smell it?

A. Yes sir.

Q. 21. And you thought that house was afire?

A. Yes sir; it reached on down and come down in there, and you could smell it as it come in through them low gaps.

Q. 22. It would come in through the gaps when the wind didn't blow hard?

A. Yes sir.

Q. 23. When the wind would blow hard it would come right on through?

A. Yes sir.

Recross-examination by General FOWLER:

Q. —. When was it that you saw that smoke, the time it looked like the woods was afire

A. It was in June.

Q. 2. What day?

A. I don't know what day, I never dated it.

Q. 3. The 25, 26 or 27th?

A. I can't say.

Q. 4. Was it the latter part of June?

A. It was somewhere along in June.

Q. 5. Give us a guess whether it was the first part or the last part?

A. Towards the middle, I guess.

Q. 6. Wasn't it on the 8th of June?

A. I wouldn't say.

Q. 7. The 9th of June?

A. I wouldn't say what day.

Q. 8. But it was in June?

A. Yes sir.

Q. 9. Wasn't it at the very time that these furnaces were shut down?

A. I don't know.

Q. 10. You don't know that they were shut down in June?
A. No sir, I don't know that they were shut down at all.
Q. 11. You had a hail storm over there in June didn't you?
A. Yes, sir, a little one.
122 Q. 12. When was that?
A. I don't remember just when it was.
Q. 13. Give us your best idea?
A. It seems to me that it was along about the first of July.
Q. 14. About the time the apples come off?
A. No sir.
Q. 15. That didn't knock the apples off the trees?
A. No sir.
Q. 16. The apples never fell off at all?
A. No sir, some of them are there yet.
Q. 17. Didn't that hail storm hurt your garden?
A. Yes sir, it knocked some holes in it.
Q. 18. Didn't it knock a good many holes?
A. Yes sir.
Q. 19. Didn't hurt your corn?
A. Yes sir, my crop of corn was late this year; it was bunched and tasseled when it come.
Q. —. You are not putting in any claim for damages arising from the hail storm?
A. No sir, and I won't the next time you hear from me.
Q. 21. Both the apples and the foliage on your present fruit crops are burnt?
A. Yes sir.
Q. 22. This year?
A. Yes sir.
Q. 23. On your peach trees?
A. I ain't got any peach trees.
Q. 24. Has the foliage of your corn been affected?
A. Nothing only these little spots on them.
Q. 25. I believe that your depositions are being taken at Blue Ridge?
A. Yes sir.
Q. 26. You are just about half way between your place and Copperhill, aren't you?
A. I don't know.
Q. 27. On an air line?
A. I don't know, I never measured it.
Q. 28. Isn't Blue Ridge almost directly between you and the furnaces at Copperhill and Isabella?
A. I don't know; I never set no compass to see, but I suppose it is.
Q. 29. Can't you get on those hill tops and see over Blue Ridge?
A. There is a little mountain there between this town and
123 where I live and you can't see it; but you can see on to Ducktown.
Q. 30. Have you looked at that field of corn right out there about 50 or 75 yards of you?

A. No sir.

Q. 31. Get up and look at it? (Witness goes to window.)

A. I can see it; but I haven't been close to it.

Q. 32. Do you see anything wrong with that?

A. I haven't examined it close.

Q. 33. Aren't there some little peach trees in sight there?

A. I see some peach trees.

Q. 34. Do you see anything wrong with those peach trees?

A. I couldn't tell without going and looking at them.

Q. 35. Don't you see an apple tree?

A. Yes sir.

Q. 36. Don't you see some apples on behind that house, some distance out?

A. Yes sir.

Q. 37. Doesn't that have every appearance of having apples on it?

A. Yes sir, it looks like it from here.

Q. 38. Any apparent damage to that?

A. I can't tell from this distance.

Q. 39. Do you see any signs on the leaves?

A. I see some on that tree yonder (Indicates).

Q. 40. What is the appearance of that leaf?

A. It's yellow.

Q. 41. That leaf; that de-d read at the top; that what you are looking at?

A. Yes sir.

Q. 42. Is that smoke damage?

A. I can't say positively; that is sorter like what I told you about.

Q. 43. Would you say that that leaf has been eaten by some kind of insect?

A. I can't say what is the matter; but there is something wrong with it.

Q. 44. That is the only thing you can see; that the only leaf?

A. Yes sir.

Mr. DRAKE: We except to all of that evidence because the witness on the stand has not had an opportunity to make an intelligent examination of the timber and trees here. Exception overruled. Appeal preayed and granted.

124 Redirect examination by Mr. DRAKE:

Q. 1. I will ask you whether or not, from your experience and observation of this smoke injury, it would not appear worse in some sections, and in some places it would not appear at all?

A. Yes sir; it would reach the lands along the creeks and rivers, and didn't have much affect on the higher lands; didn't hurt that as bad as it did the others.

Q. 2. I will ask you whether or not in the same neighborhood you would not find a patch that had been burned, and go a few hundred yards and you would find one that had not been burned?

A. Yes sir.

Witnesses Mileage—32 miles.

C. S. NORTHCUTT, being sworn to speak the truth, the whole truth and nothing but the truth, testified as follows:

Direct examination by Mr. DRAKE:

Q. 1. Where do you live Mr. Northcutt?
A. I live in Gilmer County, five miles and a half by wagon road East of Ellijay.
Q. -. Near what post office?
A. Ellijay is our Post Office.
Q. 3. What district or section do you live in?
A. Tuniptown; that is our section, what is called the Turnip Town section.
Q. 4. How near to Turniptown Mountain?
A. I live on the slope, or what is called the Northcutt mountain.
Q. 5. Do you live near Mr. Clonts?
A. In about a mile of him.
Q. 6. Are you about the same distance from the plant at Ducktown as Mr. Clonts is?
A. Yes sir.
Q. 7. Farming there?
A. My principal business is looking after the orchard interests of my brother and myself, but I farm on a small scale.
Q. 8. Who owns the land?
A. Mrs. J. D. Northcutt.
Q. 9. How long have you been living there?
A. Eleven years last January.
Q. 10. What size orchard is it?
A. The apple orchard proper?
Q. -. Is it a large or small orchard?
A. There is somewhere about 100 acres altogether, including mine and his in apples.
125 Q. 12. How many trees are there?
A. About sixty-five hundred.
Q. 13. What is the condition of these apples trees Mr. Northcutt?
A. The condition at the present time is not very favorable.
Q. 14. How are they affected and by what?
A. I think that the greatest thing there is against us is the smoke; that's my honest opinion about it.
Q. 15. What smoke?
A. Ducktown; the smoke from these furnaces North of us.
Q. 16. Did you ever see smoke in there?
A. Yes sir.

GENERAL FOWLER: Counsel for the defendant objects to the opinion of the witness as to what particularly effects the orchard because he has not shown that he is an expert and is not qualified to express an opinion. Objection overruled. Appeal prayed and granted.

Q. 17. You have seen the smoke in your section?
A. Yes sir.
Q. 18. Seen it this year?
A. Yes sir.

Q. 19. See it last year?
A. Yes sir.
Q. 20. How long have you seen it in there?
A. Some seven or eight years, I should say.
Q. 21. Ever smell it?
A. Yes sir.
Q. 22. How does it smell?
A. It smells like sulphur to me.
Q. 23. What did you notice about the condition of the apple trees after the smoke has been in there?
A. I want to refer to, if it is agreeable, a certain time?
Q. 24. That's all right.
A. The heaviest smoke I have noticed since I have been there was I think on the 8th and 9th of last June, June of the past year. Our trees seemed to be fairly well up to that time, but since that time they have scarcely growed any.
Q. 25. What effect does it have on the foliage of the trees?
A. Our foliage was very promising this last spring; we sprayed them for the candle moth, and we thought that we was going to get a good crop of apples, but after that the foliage dropped, and the
126 little apples begun to turn yellow and drop off.
Q. 26. How far advanced were they, the entire crop at that time; how big were the apples at that time?
A. About the size of a pea or a little larger.
Q. 27. You say that the leaves dropped off?
A. No, I am talking about the bloom; the foliage bloom is what I had reference to.
Q. 28. When was it that you sprayed them?
A. It was in May I think that we sprayed them; the latter part of May, I think it was.
Q. 29. How many times did you spray them this year?
A. Three times.
Q. 30. Do you spray your trees each year?
A. Yes sir.
Q. 31. What is the condition of your apple orchard now as compared with the prospects for a crop during the early part of the season?
A. The prospects at the present time are gloomy as to what they were in the Spring.
Q. 32. As to your farm crops, what do you raise?
A. I raise corn, potatoes, beans and other vegetables.
Q. 33. What effect if any did this smoke have on them?
A. Before this heavy smoke our corn silks looked fresh and good, and after that they began to turn a dark color and a great many of them dropped off; while others at a change of the air began to show a little life.
Q. 34. When that smoke comes in there from what direction is the wind?
A. It's from the North.
Q. 35. What is the appearance of it?
A. It has an appearance very similar to fire smoke.

Q. 36. Did you ever examine the corn and other crops immediately after the smoke was in there, when the corn was tasseling?
A. I noticed it this time I just spoke of.
Q. 37. What effect did it have on the tassels and the silks?
A. I never noticed the tassels; I noticed the silks. They turned kind of dark like and fell off some of them.
127 Q. 38. What effect did it have on the leaves of the trees——
A. I noticed some of the leaves with a brown spot on them.
Q. 39. You got any timber lands on your place?
A. Yes sir.
Q. 40. Did you notice anything of their condition?
A. Some, yes sir.
Q. 41. What was their condition?
A. The leaves had these spots on them.

Cross-examination by GENERAL FOWLER:

Q. 1. I believe you say that you have lived there for eleven years?
A. Yes sir, eleven years and eight months.
Q. 2. Where did you move from?
A. Marietta, Ga.
Q. 3. Smoke didn't come down that far?
A. No sir.
Q. 4. You first notice- smoke there seven or eight years ago?
A. That's the best of my recollection.
Q. 5. Don't you recollect when the high stack of the Tennessee Copper Company was built?
A. Of myself, I do not.
Q. 6. You don't know that it is a fact that that smoke commenced to come over there when that high stack was built?
A. No sir.
Q. 7. The first you noticed of it was in 1906 and 1907?
A. The best of my recollection, yes sir.
Q. 8. You are looking after that apple orchard?
A. Yes sir.
Q. 9. Sixty-five hundred trees?
A. Yes sir.
Q. 10. Different varieties of apples?
A. Yes sir.
Q. 11. How old is your orchard?
A. Eleven years ago last Spring I got out 2500, and the following Spring I set out the remainder of the archard.
Q. 12. You have good sized apple trees now?
A. Yes sir, they growed fine for the first three years, but they never have growed as they did up to that.
Q. 14. That is from 1906, and along about that time, they quit growing so much?
A. Yes sir; they haven't growed as well as they did before.
Q. 15. You have gotten some good crops off of them?
A. Yes sir, reasonable crops for the age of the trees.
128 Q. 16. How much did you make off of that orchard, say in 1911, that will be three years ago this fall?

A. We never gathered but a few apples.
Q. 17. In 1912, what did you get?
A. Only a few.
Q. 18. In 1913, what did you get?
A. I would like to change that; I spoke before I thought there about 1912; in 1912 we got the best crop we ever got there. We got probably seven or eight hundred crates that year; last year we didn't get more than probably three hundred crates.
Q. 19. Have you got any di-ease in your orchard?
A. Yes sir.
Q. —. What are they?
A. The San Hosae scale in places.
Q. 21. Got it pretty bad, haven't they?
A. Pretty bad in places.
Q. 22. As a matter of fact, the scale has spread all over that commnuity hasn't it?
A. I don't know sir, I can't speak as to that.
Q. 24. You have been spraying for it haven't you?
A. Yes sir. My orchard has been sprayed for it, but I haven't got any of it.
Q. 25. How many trees have you?
A. Twelve hundred and fifty.
Q. 26. Your orchard is better than the other orchard?
A. Yes sir.
Q. 27. Did you make a better crop on your orchard those two years than you made on the other?
A. No sir.
Q. 28. How was it last year?
A. I didn't have but a few.
Q. 29. The frost got you last year didn't it?
A. I don't know whether it was the frost or not. We don't get the apple blooms we ought and the apples shed off.
Q. 30. The frost does sometimes kill the fruit in this section?
A. Yes sir.
Q. 31. The frost killed fruit in there before the furnaces were ever put up, didn't it?
A. Yes sir, I suppose so.
Q. 32. You don't know last year, whether the bloom was killed by frost or by smoke?
A. It wasn't killed by frost last year.
Q. 33. How do you know?
A. My recollection is that we didn't have frost that time.
129 Q. 34. How about the year before that, how about that?
A. I don't remember positively.
Q. 35. Did the blooms drop off this year?
A. Yes sir; a good many. We have a few apples this year.
Q. 36. Didn't you have frost through there this year?
A. Yes sir, we had frost long before the bloom fell.
Q. 37. Frost will kill fruit if it is a heavy frost, before it opens out, won't it?

A. Yes sir, but it wouldn't have remained on as long as this did; it would have dropped off before that.

Q. 38. Isn't it a fact that the apple crop is poor this year way down in Georgia, way below where this smoke can possibly reach?

A. I can't say about that; I know that it's poor around here, and has been since the trees have been old enough to bear.

Q. 39. Isn't it true that the peach crops are not near so good?

A. It is so stated that way.

Q. 40. Haven't you had a good deal of drouth in your section this year?

A. The weather was dry in May and April and June, but we never suffered for rain.

Q. 41. You spoke of the candle moth, is that an insect that gets into the apple?

A. Yes sir.

Q. 42. And that causes the apple to fall off?

A. Yes sir.

Q. 43. It has the very effect you explained here, and causes the apple to fall off the tree?

A. Yes sir.

Q. 44. Your apples been falling off this year?

A. Yes sir.

Q. 45. Have you been through Mr. Clonts' orchard?

A. I have been there, yes sir, but I never noticed it.

Q. 46. Don't you know that Mr. Clonts' apples have been falling off as they would if the candle moth was in them?

A. I don't know sir, about Mr. Clonts's apples; I never visited his orchard enough to tell.

Q. 47. But any way the candle moth does cause the apples
130 to fall off as you have described here as your apples have been doing?

A. It will where they are not sprayed. I claim that my orchard was sprayed well for the candle moth, and what apples we have there don't show it; there is but little sign of the candle moth.

Q. 48. They do show some signs, don't they?

A. Very little; just now and then you can see an apple that probably the spray didn't get.

Q. 49. How is it in your brother's orchard?

A. Brother's orchard wasn't sprayed for the candle moth and it shows up in that some.

Q. 50. The worst you noticed this smoke, I believe you say was the 8th and 9th of June?

A. Yes sir.

Q. 51. That was on Monday and Tuesday?

A. Yes sir, I think that was the days.

Q. 52. What time of the day did you first notice that smoke?

A. It was a little after twelve o'clock.

Q. 53. Of course your apple trees had long since shed their blooms?

A. Yes sir.

Q. 54. You had a right smart little apples at that time?
A. Yes sir.
Q. 55. They had been dropping off before that hadn't they?
A. Yes sir.
Q. 56. Have you noticed smoke since then?
A. Yes sir, but not so severe as that was.
Q. 57. Do you remember when you noticed it?
A. My best recollection is that it was the 27th, 29th and 30th of July.

Redirect examination by Mr. DRAKE:

Q. 1. When does the candle moth attack the apple?
A. It is when the tree sheds the bloom and the blossoms.
Q. 2. State whether or not you sprayed for the candle moth before that time or after that time?
A. It was sprayed about the time when there was three fourths of the foliage and the bloom fell.
Q. 3. Is that or not the time to spray for the candle moth?
A. Yes sir.
131 Q. 4. You say that your orchard has been sprayed for that?
A. Yes sir.
Q. 5. Is your orchard adjoining that of your brother's?
A. Yes sir.
Q. 6. Is the same tract of land?
A. Yes sir, but his is higher up.
Q. 7. Yours is down in the cove?
A. Yes, sir. Part of my brother's is above the frost line.

Recross-examination by General FOWLER:

Q. 1. What were the constituent parts of the spray that you used for the candle moth?
A. We used lime, sulphur and zinc lead.
Q. 2. That zinc lead is a violent poison for either plant or beast?
A. Yes, sir.

Mileage of witness; 34 miles.

ASBURY HINSON, being sworn to speak the truth, the whole truth and nothing but the truth testified:

Direct examination by Mr. DRAKE:

Q. 1. How old are you, Mr. Hinson?
A. About 45 years old.
Q. 2. Where do you live?
A. Gilmer County.
Q. 3. In what part of the county; what is the name of the neighborhood in which you live?
A. Turnip Town, about six miles East of Ellijay.
Q. 4. How close to J. H. Clonts?

POOR COPY

A. About half a mile.

Q. 5. What is your avocation?

A. Well, I work for Mr. C. H. Aarnold in the orchard.

Q. 6. In what way?

A. I oversee the orchard for him.

Q. 7. You look after Mr. Arnold's orchard for him; do you do any farm work in connection with that?

A. Yes, sir.

Q. 8. To what extent?

A. Right smart. I 'tend a crop for myself and then I 'tend a crop for him; we put in something like 75 acres in corn.

Q. 9. How big an orchard has Mr. Arnold got?

A. He has a big orchard; there is something like 9,060 132 trees.

Q. 10. How long have you been in that neighborhood and been in this class of work?

A. I have been working for Mr. Arnold ever since he set up his orchard; it has been eleven or twelve years I reckon.

Q. 11. Are you familiar with the crops that are raised in that section?

A. Yes, sir.

Q. 12. Are you or not acquainted with the various trees and the kind of growth they have in that section?

A. Yes, sir.

Q. 13. If you have ever seen *in* sulphur smoke in that community tell when was the first time you begun to observe it?

A. I have saw it off and on for nine or ten years, I reckon.

Q. 14. What is the appearance of the smoke?

A. When the wind is from the North it brings the smoke in there and it settles down on the mountains about there.

Q. 16. Can you see it?

A. Yes, sir.

Q. 17. What is its color?

A. It is kinder blue.

Q. 18. Have you ever at any time been able to smell it.

A. Yes sir, at times, I have smelled it.

Q. 19. This present year, have you seen any smoke in that country and if so, when?

A. Yes sir, I have saw it in there somewhere along about the 8th and 9th of June it was in there heavy; the heaviest I ever saw it.

Q. 20. Heavier than you ever saw it in previous years?

A. Yes, sir, I think it was; I took more notice of it.

Q. 21. Whereabouts did you see it and observe it on these particular days?

A. The first day I saw it, I was sitting on the porch at home. It come up the branch. I first thought the woods was on fire, or some building on fire down below, and when I come to notice it, it was the smoke that come in there when the wind was from the North, and we had a North wind blowing that day.

Q. 22. Did you see that smoke go into this orchard of Mr. Arnold's?

A. Yes, sir.

133 Q. 23. To what extent was it in there?

A. It come in there just about eleven o'clock in the day that day, and it lasted until along about one or two o'clock and then it kinder blowed off.

Q. 24. In looking across towards Arnold's orchard was there any hill between you and it, or was it facing you?

A. It was facing me.

Q. 25. How far from you?

A. I was right against it; I live there right agin' it. The orchard comes down to the house. The next day I was off down the creek; I was half a mile from the orchard and it was so thick that I couldn't see the trees; the smoke was between us so thick that I couldn't see the trees there.

Q. 26. How big were those trees, how high?

A. Something like as high as this ceiling, I reckon.

Q. 27. Fifteen or twenty feet?

A. I would say from ten to fifteen feet.

Q. 28. How broad?

A. They are from eight to ten feet broad.

Q. 29. Would it have been easy for you to have seen those trees if that smoke hadn't been in there?

A. Yes sir, I could have seen them plain.

Q. 30. Did you notice any of the effects on the trees in the next few days; if so, what were they, after the smoke went out?

A. In a few days afterwards, just in a day or two afterwards, I begun to notice the effect on the trees; something got wrong with the trees and the undergrowth. The leaves crimped up and didn't grow any more after that.

Q. 32. You say the leaves crimped up, did they change color any, and if so, how?

A. They changed color after a while; they turned brown around the edges of the leaves and then kinder yellow and shedded off.

Q. 33. The leaves shed from the twigs?

A. Yes sir.

Q. 34. What percent did some of them trees shed off?

A. Some of them I would say 50% fell off, and the undergrowth was the same thing; some of them not any. The different varieties of the trees are hurt worse then the others; they are not all hurt alike. The Limber Twig was the last to crimp up of any.

134 Q. 35. Was it natural for the leaves to fall off in June?

A. No sir.

Q. 36. According to nature, when should those leaves fall?

A. Along the first of October is gen rally the time for leaves to fall there.

Q. 37. Did you see any smoke this year in May any time; if so when?

A. I don't know that I could tell you the dates, but I saw smoke off and on, a few times through May, I think.

Q. 38. Did you see any effects of this smoke or what appeared to be smoke on your place or on that orchard before this June spell?

A. That's the first I noticed of it.
Q. 39. The effects on the foliage?
A. Yes sir.
Q. 40. Have you observed any discoloration or smoke damages on the forests in that neighborhood?
A. I have noticed a little bit. I haven't been in the forests very much. I noticed some chestnut and oak bushes and hickory bushes; it sorter worked them like it did the apple trees.
Q. 41. You mean the same discoloration?
A. Yes sir, the same appearance in the forest as in the apple trees.
Q. 42. Have you see any smoke since June; if so when?
A. I can't tell you just when, but I have see'd it a time or two, but not so bad as them two days.
Q. 43. Do you remember the time when the L. & N. Railroad agent come up there to look at that orchard?
A. Yes sir.
Q. 44. When was that?
A. That was on the 10th or 11th, I wouldn't be positive which.
Q. 45. That in June?
A. Yes sir.
Q. 46. This year?
A. Yes sir.
Q. 47. Do you know how come him to come up there?
A. He just come up to look around and see the orchard.
Q. 48. Did he come up there specially to look over your orchard?
A. Yes, sir.
135 Q. 49. What was the result of that examination?
A. I told him to look at it and tell me what was the cause of that.
Q. 50. How did he examine that?
A. He looked at it with his eyes.
Q. 51. Did he use any glass?
A. No sir, not any glass at all.
Q. 52. He wasn't there as the agent of Mr. Arnold was he?
A. No, sir, he was there working for the interest of the L. & N. Railroad.
Q. 53. Did he claim to be interested for the copper company?
A. No, sir, he didn't claim to be interested for the copper company. He just seemed to be promoting industries on the line of the railroad.
Q. 54. You spoke something about the effects on Irish potatoes?
A. Yes, sir.
Q. —. Did you see the effects of the smoke on them this year——
A. After the smoke come in there the 'taters died down; just looked like a fire had been through them.
Q. 56. Do you mean by that that they turned brown and crimped up, or how did they appear?
A. I think they first crimped up that way (indicating) and then turned brown, and died down.
Q. 57. What effect did it have on your potato crop?

A. They didn't make anything.
Q. 58. How big a patch did you have?
A. Just a small patch.
Q. 59. Half a bushel planting?
A. Two or three bushels.
Q. 60. Have you observed the effect of the smoke in there on any other farm crops such as wheat, rye, oats and anything of that kind this year?
A. No, sir.
Q. 61. You didn't have any crops of that kind?
A. No sir, we didn't have any rye, oats or wheat.
Q. 62. Did you see it on any of your neighbors' crops?
A. No, sir, I didn't pay no attention to it.
Q. 63. Any other garden truck that you observed that was damaged by this smoke?
A. The tomato vines, they died like the 'taters, and the pie plants they died like the 'tater tops; that's about all I noticed.
136 Q. 64. Last year, did you observe any smoke in there?
A. I don't know that I did; I won't be positive about that; I don't have no recollection about that. I have noticed the smoke in there every now and then, and it has been coming in there for six or seven years, but I haven't noticed that it damaged anything in particular.
Q. 64. Was it as bad as it was this year?
A. No, sir, it wasn't so bad as it was this year.

Cross-examination by General FOWLER:

Q. 1. Did you state how long you had been looking after that apple orchard for Mr. Arnold?
A. I have been looking after it off and on ever since he set out the orchard. I helped him to clear up the land and prepare for the orchard.
Q. 2. When did he have it cleared?
A. Ten or twelve years ago.
Q. 3. Do you remember what year he had it cleared, was it 1904 or 1905?
A. I don't recollect.
Q. 4. Then you planted the trees right away?
A. Yes, sir, they have been set out for ten or twelve years; somewheres along about that time, and then we have set out others since that time.
Q. 5. At first it grew off right well?
A. Yes sir, it growed nicely for a while.
Q. 6. For how many years?
A. Three or four years.
Q. 7. Then it has been something like eight years since you first noticed the smoke?
A. Seven or eight years.
Q. 8. Before that time you hadn't noticed any smoke?
A. No, sir.

Q. 9. Had you heard any complaint in that neighborhood about the smoke?

A. No, sir, I don't know that I did.

Q. 10. What was the first effects of the smoke that you noticed?

A. The first I noticed that come in there was on corn silks. The corn would come out and be pretty and fresh and silky, and the silk would die immediately after the smoke would be in; then the silk would die down.

137 Q. 11. That was the first effect that you noticed?

A. Yes sir, about the first thing.

Q. 12. That would happen along in June when the corn was silking?

A. Yes sir; that was several years ago.

Q. 13. You didn't notice any effect on the corn silk until two or three years ago did you?

A. No sir.

Q. 14. How long has it been since you noticed any injuries arising from smoke?

A. I think the smoke, that is the first, I think it has been three or four or five years ago that I noticed the smoke on the corn silks.

Q. 15. You ever notice any damage to the crops or timber until three to five years ago?

A. Yes sir.

Q. 16. What was the next injury?

A. It was, I think, on these apple trees and potato tops.

Q. 17. How many years ago has that been?

A. That was in June.

Q. 18. This last June?

A. Yes sir.

Q. 19. You didn't notice any damage in your neighborhood, as I understand you, from the time you noticed this damage to the corn silks until the damage done to the apple trees this present summer?

A. Yes sir.

Q. 20. Did you have a pretty good apple crop last year?

A. No sir.

Q. 21. Wasn't they killed by the frost in the Spring?

A. I believe last year they got killed by the frost.

Q. 22. How was it year before last?

A. Year before last they didn't get killed by the frost, but we didn't get no apples.

Q. 23. Wasn't that because of the candle moth?

A. No sir, it wasn't large enough for the candle moth to take effect. It was just when they bloomed and shed off and the apples begun to grow. The candle moth sets in a little later than that.

Q. 24. That was two years ago, you say?

A. Yes sir.

Q. 25. That was in 1912, wasn't the apples better that year than they have ever been?

A. In portions they did, but in portions of the orchard lots

138 of the trees shed their blooms.

Q. 26. About what percent of your trees failed in apples that year?

A. There wouldn't have been more than 10% of them fail.

Q. 27. What per cent had apples on them?

A. They was just a few of them that had.

Q. 28. What varieties of the trees were they?

A. There was the Ben Davis; the Fall Queen and the Limber Twig was pretty full; them was the older trees that was set out when Mr. Arnold bought the place.

Q. 29. Didn't you have a frost that year?

A. No sir, I don't think we had any frost after the bloom come out.

Q. 30. When did you have a good crop?

A. We ain't never had a good crop of apples there.

Q. 31. Have your apple trees the blight?

A. Yes sir, a few of the trees around through the orchard have got the twig blight.

Q. 32. Have you got the San *Hosae* scale?

A. Yes sir, we have that.

Q. 33. Got it pretty bad?

A. It has been in pretty bad but we have about got it stopped. A few patches about through the orchard that have got it.

Q. 34. That is the most dangerous of all tree diseases, isn't it?

A. Yes sir.

Q. 35. When it gets into an orchard, its almost impossible to stop it?

A. I think a man can kill it; I have killed it in several trees.

Q. 36. You have to spray your orchard with very poisonous material to kill the San *Hosae* scale, don't you?

A. We spray it with lime and sulphur.

Q. 37. What do you spray with for the candle moth?

A. Arsenic lead, about three quarts to fifty gallons of water.

Q. 38. Did you spray this year for the candle moth?

A. Yes sir, where they are there; where the fruit had shed off I didn't spray.

Q. 39. Did you spray for the San *Hosae* scale?

A. Yes sir, but we spray in the winter for that.

139 Q. 40. Did the fire go through your orchard this year?

A. No sir, we haven't had no fire in the orchard this year.

Q. 41. Did you last year?

A. No sir, not all of it; we did have fire go through a portion of it, and that's the only fire we have had in the orchard.

Q. 42. So it is, that the first damage you ever noticed in there, except the damage three to five years ago to the corn silks, was the 8th and 9th of last June?

A. Yes sir.

Q. 43. And that was when the smoke come in there and injured your potatoes?

A. Yes sir, the smoke come in them two days heavy, and I see'd the injury after that.

Q. 44. How many days?

A. Right immediately; the next day I believe it begun to show.
Q. 45. You haven't seen it in there since that time in sufficient quantities to do injury?
A. Not so bad, no sir.
Q. 46. On how many occasions have you seen it in there since that?
A. Three or four times, I reckon; I wouldn't say positive.
Q. 47. You don't know what days they were?
A. No sir.
Q. 48. I believe you said it was in July, or did you?
A. No sir, it wasn't me. I don't recollect about that.
Q. 49. Do you remember whether it was July or not?
A. No sir, I don't remember whether ot was July or not; I don't remember that.
Q. 50. Have you filed any claim for damages?
A. No sir.
Q. 51. Has Mr. Arnold?
A. I think so; I don't know that he has.
Q. 52. Of course, you haven't any personal interest in the orchard?
A. No sir.
Q. 53. I believe you said that you hadn't noticed the effect of this smoke on the wheat and rye crops in that country?
A. No sir.
Q. 54. And you only noticed it on the corn silks one year?
A. Yes sir, I have noticed it possibly two.
Q. 55. When?
A. Last year we had some peas that shed their leaves off.
Q. 56. You really don't know what caused that?
A. No sir.

140 Redirect examination by Mr. DRAKE:

Q. 57. I will ask you if it isn't a fact that it has gotten so you can hardly raise peas in that neighborhood at all?

General FOWLER: We object to that as leading. Objection Overruled; Appeal prayed and granted.

Q. 2. How about that?
A. No sir, we can't raise any peas to do any good.
Q. 3. You were asked about the San *Hosoe* scale in there?
A. I call it the St. Joe scale.
Q. 4. That is what it is generally called by farmers?
A. Yes sir.
Q. 5. How much San *Hosoe* scale is there in that orchard?
A. There has been a right smart in the orchard in one or two places next to the Northcutt orchard; there is a little strip of scale on the trees; a few patches on the road that leads out to the top of the mountain.
Q. 6. Is it just a few trees in comparison with the 9,000 trees?
A. Yes sir.

Q. 7. Those that are not affected of course would not be subject to this condition that you have told General Fowler about?
A. How is that?
Q. 8. General Fowler asked you something about the effect of this San *Hosoe* scale on the trees and the fruit?
A. Yes sir, it gets up on the twigs and the limbs and gets on the apples.
Q. 9. Trees that are not so affected in that orchard, would they be affected in the same way as those that had this scale?
A. No sir.

Recross-examination by General FOWLER:

Q. 1. You didn't notice any damage to the peas until last year, did you?
A. No sir.

Mileage of witness: 33 miles.

C. S. NORTHCUTT, recalled for further cross-examination by General Fowler.

Recross-examination by General FOWLER:

Q. 1. Have you put in any claim before this arbitration
141 board who has the distribution of $16,500.00 paid annually by the Tennessee Copper Company?
A. I never have.
Q. 2. Has your brother?
A. I don't know whether he has or not.
Q. 3. Don't you understand that he has?
A. I can only tell you what I do know.

Mr. DRAKE: We except to that as hearsay. Exception overruled; appeal prayed and granted.

A. That has been several years ago. Brother told me that he had two lawyers up in Knoxville, Tenn. to look after this matter, and that probably he would want me to go up there as a witness; and that's all I know about it.
Q. 4. Who brought you here as a witness?
A. I was subpœnaed by the State.
Q. 5. Have you talked to either of the Messrs. Shippen about it?
A. Since I come here?
Q. 6. Yes?
A. It has been general talk with us all along. I don't know that I ever talked to Mr. Will Shippen. I was around Mr. Shippen's store and first one and then another was talking about it, and I have heard Mr. Frank Shippen speak about the smoke.

W. A. PAINTER, being first sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. How old are you?
A. Forty-three.
Q. 2. Where do you live?
A. In Gilmer County.
Q. 3. What part of Gilmer County, what neighborhood?
A. Five or six miles East of Ellijay in Turniptown.
Q. 4. How close to J. H. Clonts?
A. About a mile I reckon, or a mile and a quarter.
Q. 5. Which direction from Clonts?
A. West of Clonts, towards Ellijay.
Q. 6. How long have you been living in that neighborhood?
142 A. I have been living there all my life; was raised there.
Q. 7. What is your profession?
A. Farming and grow a little orchard.
Q. 8. How much land do you own?
A. About two hundred acres.
Q. 9. What kind of crops do you grow on that land?
A. Corn, potatoes, etc.
Q. 10. How long have you been at that?
A. Ever since I have been farming; ever since I have been old enough.
Q. 11. Are you familiar with the different kinds of garden truck and farm products that are grown in that neighborhood, or not?
A. Yes sir.
Q. 12. Are you familiar with the forest trees and the different varieties that grow in that section?
A. Yes sir, I know the most of them.
Q. 13. If you have observed in the last few years, any smoke in that country, tell when it began, when you first observed it and to what extent it has been in that country?
A. It has been about six years ago, I guess, the first time I noticed it being so bad in there; it has been bad in there ever since; some years worse than others.
Q. 14. How has it been this year?
A. Pretty bad.
Q. 15. How has it been this year as compared with other years?
A. One year it was as bad as this year, but it was later in the season; that was about six years ago.
Q. 16. What is the appearance of that smoke?
A. It drifts in through them low gaps; drifts in and settled on the mountains and in the coves.
Q. 17. Can you see it?
A. Yes sir.
Q. 18. What color is it?
A. It is a blue kind of smoke.

Q. 19. Can you smell it?

A. Yes sir, I have smelt it a few times.

Q. 20. This year, what times have you seen it in there, as you remember.

A. Along the latter part of May and in June it was in there.

Q. 21. In May, what time was it in there?

A. I don't know exactly; it was something about the middle of May I first noticed it in there.

Q. 22. Did you see any of the effects of it after it was gone?

A. At that time I didn't.

Q. 23. Have you since then observed it in there?

A. I have seen some, yes sir.

143 Q. 24. What was it?

A. The apple trees, the young twigs and leaves was kinder parched up. I have noticed it on the corn silk; it seems to die early.

Q. 25. How much corn have you in cultivation?

A. I have ten or twelve acres.

Q. 26. It was your corn that you saw the effects on?

A. Yes sir, and on others too.

Q. 27. Describe now, Mr. Painter, with reference to the time after you had seen this smoke in there, how long would it be before you would observe these effects?

A. Right immediately afterwards; something like three or four days.

Q. 28. Did you observe any effects on the forest trees?

A. Some little, but I never paid much attention to it.

Q. 29 What kind of varieties of trees have you noticed that were effected?

A. The hickory, I believe, and the Maple, something like that, I have noticed that the leaves would be parched up.

Q. 30. What appearance did it have on the leaves?

A. They would be parched up around the edges and kinder spotted, and the leaves would look like they were rotted, and looked brown.

Q. 31. What effect, if any, did it have on the corn you noticed?

A. I noticed that the silk would dry up, and I have seen the blades of the young corn where it was parched up.

Q. 32. Your garden truck, did you see any effects on that?

A. I never paid much attention to that; I have noticed some beans that way.

Q. 33. On anybody else's gardens or crops have you observed it?

A. I was through some Irish potatoes on Mr. Arnold's place, I believe I noticed that.

Q. 34. How were these potatoes effected?

A. They looked like they was frost bit where the leaves was dried up.

144 Q. 35. What has been your observation with reference to the distribution of this smoke damage, has it been all over the country or has it been about in spots?

A. No sir, it seems to be in streaks; some places is worse than it is in others.

Q. 36. When you observed and saw the smoke, how is the conduct of the smoke with reference to traveling through the hills?

A. I have seen it rolling through there like a fog, but it wasn't a fog, for I know the smoke.

Q. 37. Did it follow certain channels——?

A. Yes sir, it seemed to come through the low gaps in the mountains; it somes in there more than anywhere.

Q. 28. Then would you observe the effects on the timber immediately after that?

A. I have never examined the forests and the forest timber after that.

Q. 39. Have you observed any crops in the line of smoke?

A. I have noticed the fruit trees; the young tender leaves would dry up immediately.

Q. 40. Have you observed any apples falling off this year; if so where?

A. I did early in the Spring in my orchard and Mr. Arnold's and in Mr. Northcutt's there.

Q. 41. Did you observe it on any farm truck besides the corn?

A. I think I did on some Irish potatoes and I think on some young beans, but I never paid much attention to that.

Q. 42. Your place with reference to Mr. Arnold's how are you located?

A. Let's see; West.

Q. 43. Any mountains or hills between you and the Ducktown plants?

A. Yes sir.

Q. 44. How does the effect on your farm compare with those up on these hills and mountain sides facing towards Ducktown?

A. It don't seem to hurt me so bad; I am down under the mountain a little; they are back further up on the mountains or hills, and it hurts them worse.

145 Cross-examination.

By General FOWLER:

Q. 1. I believe you say, Mr. Painter that that smoke has the appearance about the same as a fog?

A. Yes sir, I have seen it that way a few times.

Q. 2. It is the same color of a fog, isn't it?

A. It's mighty nigh the same color.

Q. 3. You very frequently do have fogs there in the mountains?

A. Yes sir.

Q. 4. I believe you further said that the first you noticed it of any consequence was five or six years ago?

A. Somewhere along about that time was the first I ever noticed it.

Q. 5. Wasn't that the first time you ever heard any complaint?

A. I don't know about that; I can't remember.

Q. 6. The first time you ever gave any attention to it then?
A. I heard complaint seven or eight years ago; that is the first I ever noticed it.
Q. 7. Then it was, that some seven or eight years ago you first heard complaint?
A. Yes sir.
Q. —. And four or five years ago you first noticed any effects from it?
A. Been bad, yes sir.
Q. 9. What were the first effects that you noticed?
A. On corn; that was the first effects I noticed.
Q. 10. On the silk of the corn?
A. Yes sir, but I never paid much attention to it along about that time.
Q. 11. You got good crops of corn, didn't you?
A. Reasonably good, but it didn't produce like it used to.
Q. 12. The land has been running down, hasn't it?
A. No sir.
Q. 13. Been fertilized?
A. The best land we got don't produce like it used to.
Q. 14. Any new land?
A. New cleared up and it won't do it.
Q. 15. Your fresh land that you use now, and you didn't use six or eight years ago, you don't know how that land would have produced six or eight year ago, do you?
A. No sir.
146 Q. 16. Did you notice any smoke in there last year of any consequence?
A. I don't know that I noticed much last year.
Q. 17. How was it year before last?
A. I don't remember that; it has been in there some, all of the time. whenever the wind is from the North.
Q. 18. You mean that from time to time you would see it?
A. When the wind is from the North you can see it in there any day.
Q. 19. About how often do you have the wind from the North?
A. Along in the Spring it was out of the North pretty near all the time.
Q. 20. Generally the air goes the other way doesn't it?
A. Sometimes it does, and sometimes it don't.
Q. 21. Generally the air currents are to the Northeast, aren't they?
A. Not altogether they ain't.
Q. 22. Generally speaking they are though, aren't they, though sometimes they drift back over there?
A. It was from the North all through May and June of this year. pretty near all the time.
Q. 23. That is something extraordinary, isn't it?
A. Yes sir, it's hardly ever that long at a time.
Q. 24. Have you ever known of such a thing before?

A. I believe it has been from the North more this Spring than I ever seen it.

Q. 25. You didn't notice any effects from this smoke about the 8th of June, did you?

A. Somewhere along about there it was the worst days we had; the 8th and 9th.

Q. 26. It was after that that you noticed this damage to these crops?

A. Yes sir.

Q. 27. And your garden there?

A. Yes sir.

Q. 28. Have you noticed it since then?

A. Yes sir.

Q. 29. When?

A. All along every few days; I noticed that whenever the wind changes from the South to the North, that smoke comes in there.

Q. 30. Did you notice any the 26th and 27th of June?

A. No sir, I don't remember whether I did or not.

147 Q. 31. That the latter part of June?

A. I don't know whether there was any the last of June or not; it was there all along during June.

Q. 32. Have you prepared and presented any claim to this arbitration board?

A. No sir.

Q. 33. How much are you damaged?

A. I don't know sir, I can't tell about that.

Q. 34. Are you contemplating bringing suit against either one of these companies, along with these other gentlemen?

A. I haven't studied anything about it, or talked anything about it at all.

Witness' mileage: 33 Miles.

W. S. HINSON, after being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination.

By Mr. HILL:

Q. 1. Where do you live?

A. In Gilmer County.

Q. 2. In what district or township do you live?

A. I live near Ellijay in the Ellijay District.

Q. 3. How far from Ellijay?

A. Three miles.

Q. 4. Near Youkon?

A. I am East of Youkon, on Carter Kay river.

Q. 5. What is your settlement or section known as, is it the Youkon District, or what do they call it?

A. My native settlement there, I live there in the creek and they call it Owltown on the Caterkay river.

Q. — Do you live near the Owltown Mountain?

A. Yes sir, and the Oak Hill Post Office up on the road there three miles from Ellijay.

Q. 7. That is about how far from the plant of the Tennessee Copper Company?

A. I just couldn't tell you about that.

It is agreed between counsel for the State of Georgia and the defendant that the witness lives 22½ miles, air line from the Tennessee Copper Company, and 25 miles from the Ducktown Sulphur, Copper & Iron Company, in a nearly South direction, a little West of South of the two plants.

148 Q. 8. How long have you been living in that settlement?

A. I have been living there from ten to twelve years.

Q. 9. How long have you been living in Gilmer County?

A. I was born and raised in Gilmer County.

Q 10. Are you familiar with the forest timber lands and the farming interests in that section of the county?

A. Yes sir.

Q. 11. You are a farmer yourself?

A. Yes sir.

Q. 12. State whether or not you have ever noticed any smoke in your section of the country?

A. Yes sir, I have noticed it in there at different times.

Q. 13. Seen it?

A. Yes sir.

Q. 14. What does it look like?

A. It is a heavy smoke that comes over and settles down on the mountains and the valleys.

Q. 15. Can you smell it?

A. Yes sir, sometimes you can.

Q 16. What does it smell like?

A. Like sulphur; like the smoke you smell down there around the plants.

Q. 17. You have been to the plants?

A. Yes sir.

Q. 18. Smell the smoke there?

A. Yes sir.

Q. 19. Which direction would the wind be when you could see it and smell it?

A. You could see most of the smoke there when the wind was from the North and Northwest.

Q. 20. How often have you seen that smoke in there?

A. I can't tell you; I have seen it off and on for the past six or eight years.

Q. 21. To what extent have you seen it in there; much or little of the time?

A. At times it has been bad; I believe I have noticed it worse this year than I have ever before; there was more smoke and heavier.

Q. 22. When did you see it particularly this year?

A. I saw it in there along the latter part of May being so bad,

and along the first of June, the 8th or 9th of June. At that time I was up in the orchard of Mr. Arnold, and the orchard me and my brother owns.

Q. 23. You are a brother of the Mr. Hinson that was here this morning?

149 A. Yes sir. He stays up there on the farm and I went up there on the 8th of June and the smoke was bad; it was worse up there that day than I ever saw it up until about one o'clock, and a little brief wind blowed it off. Before I got to the orchard, I couldn't see the trees very good; it was so heavy on the ground that it looked like the woods were afire. I went on up there and after dinner we went up to the orchard and about one o'clock it got better; there was a little brief wind and blowed it off.

Q. 24. Have you seen any smoke in there since then?

A. Yes sir; the next day where I live there it was bad on the 9th.

Q. 25. How far is that from Arnold's orchard?

A. I expect it's about three miles; my brother lives there at Mr. Northcutt's and has an orchard between Mr. Arnold and the mountain.

Q. 26. Did that smoke that you smelled there in that section smell like the smoke at the plants?

A. Yes sir, on the 8th, it was strong.

Q. 27. Have you seen that same smoke in there and smelled it since that time?

A. Yes sir, one time since that on the mountain.

Q. 28. Did you notice the condition of the orchard and the crops after this smoke was in there?

A. Yes sir.

Q. 29. What was their condition?

A. The orchard seemed to be damaged; it affected the growth on it; that day was on the 8th, I noticed that it looked like they was wilted and wasn't in a healthy condition, and later I was back there again in something like one or two weeks; and this young growth there was dead; I mean the tender young sprouts that come out this year's growth.

Q. 30. How did you say it was effected?

A. It had kinder dried up and was dead; some of the leaves had fallen off the twigs, or either knocked off.

Q. 31. The leaves had fallen off?

A. Yes sir, and some of them still dying.

Q. 32. What effect did it have on the crop of apples?

150 A. A majority of the crop fell off when they were small, just after the bloom, and then the apples didn't look healthy, and they kept dropping off; they dropped worse when they were small after the bloom, along about the time the bloom shed off the trees.

Q. 33. What does the smoke do to the leaves of the trees?

A. I suppose that it kills them.

Q. 34. I mean what can you see?

A. You mean the fruit trees?

Q. 35. Yes?

A. The first I noticed they sorter crimped up and they keep shedding, and you could tell that something was the matter with them.

Q. 36. Are you familiar with the timber through that section?

A. Yes sir.

Q. 37. What effect does it have on that timber?

A. The leaves of the forest trees turn brown and drop from the twiggs of the trees.

Q. 38. Have you seen smoke in those forests there?

A. Yes sir.

Q. 39. What do you raise on your farm there?

A. I raise wheat, rye, corn, peas, Irish potatoes, and things of that sort.

Q. 40. How have your crops been for the last few years?

A. They have not been as good as they have for a few years back. Take the peas, I haven't had any success at all raising peas.

Q. 41. State whether or not the smoke effects the peas?

A. Well, I think it does.

Q. 42. Does it effect any of the other things you raise?

A. Yes sir, when that smoke comes down on them Irish potatoes and the wheat and the rye, it hurts it bad. I didn't sow any oats at all this year.

Q. 43. Why is that you can't raise them?

A. I think that the smoke kills them.

Q. 44. Did you ever raise any oats in that section?

A. Yes sir.

Q. 45. Is the land suitable for growing oats?

A. Yes sir, and for peas too; we used to raise a lot of peas and corn down there, but we don't do it any more; and the wheat, I had some good wheat land in wheat and had a good stand, about eighteen bushels in one piece. I sowed about eighteen bushels and it
151 seemed like I was going to have a fine crop of wheat there right on up until the wheat bloomed, and when I thrashed it out I got 27½ bushels.

Q. 46. When did that stop growing?

A. Along about the first of June; I haven't taken any notice of the dates.

Q. 47. How high was the wheat at that time?

A. It was up and headed up.

Q. 48. Have a good sized head?

A. Yes sir, nice large heads; it was thrifty looking wheat up until the time it bloomed.

Q. 49. What effect did this smoke have on the corn?

A. I don't know as I could tell you that.

Q. 50. For instance when it is tasseling?

A. When it is tasseling, I think it would have a tendency to kill the bloom and the silk. I have noticed a lot of the silks dry up on the corn, and the corn would come short and wouldn't mature and didn't make as good corn.

Q. 51. I will get you to state how this country was for raising wheat formerly?

A. Well sir, reasonably good, when we had good land; where we put wheat on good land, we had reasonably good crops.

Q. 52. How would you say that crops are this year, as compared to previous years?

A. They are not turning out like they used to.

Cross-examination.

By General FOWLER:

Q. 1. How long have you lived in Owltown?

A. Something like ten or twelve years.

Q. 2. That is something like three or four miles almost due South of where your brother lives on Turniptown?

A. Yes sir. I expect it's a little Southwest of him.

Q. 3. The first you noticed of any smoke coming in there was some six or eight years ago?

A. Yes sir, I have noticed smoke in there on the mountain for the last six or eight years; I wouldn't say positively how long.

152 Q. 4. When did you first notice any damage on the trees?

A. I have noticed damage on the forest for a right smart while.

Q. 5. How many years?

A. Five or six years, perhaps.

Q. 6. How long has it been since you first noticed any damage to the crops; the peas and oats?

A. Three or four or five years.

Q. 7. Do you remember in what year it was that you first noticed any damage to the peas and oats?

A. No, sir, I couldn't be positive, but it has been something like four or five years ago.

Q. 8. When did you quit trying to raise peas and oats?

A. I haven't quit trying to raise peas at all.

Q. 9. When did you last sow peas?

A. I planted peas last year.

Q. 10. You raised peas last year?

A. Not many, I didn't.

Q. 11. Do you know what was the matter with them last year?

A. No, sir, but they didn't grow and mature like they ought.

Q. 12. When did you plant your peas?

A. I planted them along in April or May when I planted corn; I generally follow along and plant them in the corn, between the hills.

Q. 13. When you plowed the corn you plowed the peas?

A. Yes, sir, work them right together. Sometimes I sow them after the wheat harvest.

Q. 14. When you plant peas with the corn, you plant them together?

A. Yes, sir.

Q. 15. Raise any peas year before last?

A. Yes, sir, there was peas on the place.

Q. 16. You say this year, they are not looking good?

A. No, sir; they don't look good. Last year we didn't get many peas. We had a good many planted all over the farm, and I think we got somewhere between ten and fifteen bushels.

Q. 17. What time last year did you notice any smoke in there?

A I don't remember what time it come in there, but it come in there through growing season.

153 Q. 18. You didn't notice as much last year as this year?

A. No sir.

Q. 19. In the year 1912, you didn't notice as much as this year?

A. No sir, not as much as this year.

Q. 20. Which was the first year, before the present year that it was the worst?

A. I can't tell you sir which was the worst. It has been in there every year, but it seems like it has been worse this year than before.

Q. 21. When was the last time you sowed any oats?

A. Last year.

Q. 22. Have pretty good oats last year?

A. No sir.

Q. 23. What was the matter with them?

A. I don't know sir; I fertilized the ground well.

Q. 24. During the present year, you didn't notice any smoke before the eighth of June, did you?

A. Yes sir, I notice smoke all along through April and May.

Q. 25 What days in May?

A. I disremember the dates in May.

Q. 26. But you didn't notice any bad effects until the 8th of June?

A. That was the first I noticed the orchard. The young corn was bit along the first of June, from that until the 8th of June. I was in different fellows' fields besides my own, and the young corn was bit, and looked like it had been frost bit.

Q. 27. Do you know what did that?

A. No sir. I thought at first that some worm was doing it, and I pulled some of the corn up but I couldn't find any worm there.

Q. 28. Did you let that corn alone?

A. Some of it.

Q. 29. Didn't that corn come right on up?

A. Some of it did, and some of it didn't; some of it never did come up.

Q. 30. But on the 8th of June you noticed the smoke in there pretty badly.

A. Yes sir, the 8th and 9th of June was the worst, in my opinion, those two days, that I ever saw it in there.

Q. 31. It came in along about eleven o'clock?

A. Yes sir, ten to eleven o'clock.

154 Q. 32. You noticed it in there only once since then?

A. Yes sir, I have noticed it in there a right smart since then, 'long every few days after that; then there wasn't any smoke in there for awhile and along in July it was in there again, I think

the 27th of July, or 26th of July, I was in the orchard of Mr. Arnold, and it come in there on that day.

Q. 33. You haven't seen any bad effects yet?

A. The orchard was pretty badly damaged.

Q. 34. But that was from the 8th and 9th?

A. Since the last days, I haven't been back in there and I don't know what it has done, but it was in bad shape.

Q. 35. That smoke looks like a fog, don't it?

A. Yes sir, still you can tell that it is smoke. You ever see the smoke settle in the coves?

Q. *34*. No. Isn't it pretty hard to tell it from a fog up there?

A. No sir, you can tell that it's smoke because it comes in there on bright sun-shiny days. Of course in cloudy, dark weather it looks very much like a fog.

Q. 36. You do have fogs, there in the mountains?

A. Yes sir, but not on bright sun-shiny days.

Q. 37. You haven't filed any claim for damages, have you?

A. No sir.

Q. 38. Do you contemplate filing any?

A. I don't know what I might do.

Q. 39. Are you suing either one of the companies?

A. No sir, but I don't know what I might do later.

Redirect examination by Mr. HILL:

Q. —. State whether or not you have ever seen any fogs on bright sun shiny days?

A. No sir.

Q. 2. Have you ever seen any smoke in there on bright sun shiny days?

A. Yes sir.

Mileage of witness: 40 Miles.

155 GEORGE HINSON, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. HILL:

Q. 1. How old are you Mr. Hinson?

A. I am 56 years old.

Q. 2. Where do you live Mr. Hinson?

A. In Gilmer County, close to Ellijay.

Q. 3. How far from W. S. Hinson?

A. About two miles and a half or three.

Q. 4. East course?

A. Yes sir.

Q. 5. About the same distance from the copper plants that he does?

A. Yes sir.

Q. 6. How long have you been living there?

A. Eight or nine years.

Q. 7. How long have you lived in Gilmer County?

A. Ever since I been born nearly.
Q. 8. Were you born in Gilmer County?
A. No sir, I think I was born in Murray County, and moved to Gilmer county when I was young.
Q. 9. You a farmer, Mr. Hinson?
A. Yes sir.
Q. 10. Are you familiar with crop conditions and the fruit trees in that section?
A. Yes sir.
Q. 11. State whether or not you have ever seen any smoke in your section of the country?
A. Yes sir, I have seen a good deal of it in there.
Q. 12. Can you see it?
A. Yes sir.
Q. 13. What does it look like?
A. The smoke.
Q. 14. Yes, what is the color of it?
A. It is a sort of bluish looking smoke.
Q. 15. Can you smell it?
A. Yes sir.
Q. 16. What does it smell like?
A. Like sulphur.
Q. 17. Have you ever been up around these plants?
A. No sir.
Q. 18. How many times have you seen that smoke in there for the past several years?
A. I see it in there most every year for several years.
Q. 19. Have you seen it there this year?
A. Yes sir.
Q. 20. How many times?
A. Through May some, and in June. On the 8th and 9th
156 of June I saw it. It come down there about dinner time that day.
Q. 21. Is that the smoke that you describe as smelling like sulphur?
A. Yes sir.
Q. 22. Where is the wind from when you see the smoke?
A. It is generally from the North.
Q. 23. Have you noticed the condition of the crops and plants after that smoke would come in?
A. Yes sir, I noticed my 'taters; I noticed them after the smoke; they kinder crimped up and looked like they had been burned.
Q. 24. State whether or not that was generally the condition through there after the smoke would come in?
A. Yes sir.
Q. 25. How does it effect *on* corn and things like that?
A. Yes sir, it kinder crimps up and looks like it is burned.
Q. 26. You ever notice the tree leaves?
A. Yes sir, they crimps up sorter and turn brown.
Q. —. How does it effect corn?
A. Something like frost bit.

Q. 27. Did you have any frost after you planted corn at all?
A. No sir.
Q. 28. After the corn comes up and silks and tassels, how does it effect it?
A. It will dry up and fall off.
Q. 29. What effect does that have on the size of the ear?
A. It stunts the corn some.
Q. 30. Make it light and chaffy?
A. Yes sir, I should think it would.
Q. 31. State whether or not it stunts the growth and cuts down the yield of corn?
A. I suppose that it cuts it down; I suppose that the silk supports the corn.
Q. 32. How have the crops been in that section for the past several years?
A. Not as good as they used to be.
Q. 33. Did you live in that section before that smoke ever bothered you?
A. Yes sir.
Q. 34. How do crops now compare with those made then?
A. We don't make more than half as much corn as we used to make when I was a boy.
157 Q. 35. What effect does it have on peas, if you know?
A. I have quit planting peas.
Q. 36. Why?
A. It just killed the peas so bad that I quit.
Q. 37. Didn't have any success with them?
A. No sir.
Q. 38. How about oats, rye and wheat?
A. I ain't sowed any oats; I sowed some wheat, and my wheat this year, after that smoke come down in there, I told the boy——
Q. 39. Don't tell what you told anybody; what was the condition?
A. It just dried up and parched it.
Q. 40. What was the yield from that particular field that this smoke settled on?
A. How much did I make, you mean?
Q. 41. Yes, how was the yield from that field?
A. I sowed fourteen bushels and I got thirty-one.
Q. 42. How many bushels could you get ordinarily?
A. I don't know exactly, I reckon about twenty bushels to the acre.
Q. 43. And you got how many bushels?
A. I sowed about fourteen acres, and I only got thirty-one bushels from the fourteen acres.
Q. 44. How does the crops of wheat, rye, oats and corn compare now with what it was some years ago?
A. It ain't nigh so good as it was.
Q. 45. Are you sowing much wheat and oats now?
A. No sir, we ain't sowing much small grain now like we used to.

Q. 46. Have you noticed the effect on the forests?
A. I have noticed something on the trees that colored them; colored the leaves.
Q. 47. Have you got any timber?
A. The man has that I live on his place. I live on Mr. W. H. Hill's place, and he has got 1200 acres.
Q. 48. Has he an orchard there?
A. Yes sir.
Q. 49. What effect does it have on his orchard?
A. Seems like it has a right smart effect.
Q. 50. How does the crop of apples now compare with those under ordinary conditions?
A. The trees bloomed and shed off their blooms, and he ain't made no apples hardly.
158 Q. 51. State whether or not the smoke which you described on the 8th and 9th of June came in on his orchard?
A. Yes, sir.
Q. 52. What effect did it have on that orchard?
A. A few days after the leaves would wilt up and begin to fall off.
Q. 53. Damaged much?
A. It seemed like the tender young growth was killed on it.
A. 54. Did the apples stay on or fall off?
A. They are falling off some; some of them are on the trees yet and some are falling off.
Q. 55. When did you first move there?
A. I don't know exactly, but it was eight or nine years ago.
Q. 56. You live on Mr. Hill's place?
A. Yes, sir.
Q. 57. You don't own any land there?
A. No, sir, but I got some up on Turnip Town creek.
Q. 58. How many years after you went there before you noticed any bad effects from the smoke?
A. It was two or three years before I noticed much damage from the smoke.
Q. 59. What was the first damage that you noticed?
A. The first damage that I noticed, I cleared up about six acres of mountain land and put in some Irish potatoes; the vines come out all right and then after the smoke come in they wilted down and stopped growing. I got 175 bushels off of that six acres but they wasn't no count much. That is the first I begin to notice it.

Cross-examination by General FOWLER:

Q. 1. Didn't you never have potato vines to wilt from any other cause?
A. Never did like that before.
Q. 2. You have seen them wilt?
A. Yes, sir.
Q. 3. You have seen them wilt from dry weather?
A. No, sir.
Q. 4. You have known potato patches to fail entirely?

A. Yes, sir, but they had plenty of rain on them.
Q. 5. What year was that?
A. I forget; it was some two or three years after I moved over there.
159 Q. 6. You hadn't seen any smoke in there just previous to seeing those vines wilt up?
A. Yes, sir, I saw it come in there.
Q. 7. How long was that before you saw those potato vines wither?
A. It was just a few days.
Q. 8. What was the next damage you noticed?
A. The next damage I noticed was my peas failing.
Q. 9. What year was that?
A. It was after that a while, I have forgot.
Q. 10. How many years was it after you noticed your potato patch wither, before you noticed your peas wither?
A. I forget.
Q. 11. Two or three years?
A. May not have been so much; I don't recollect now how long it was.
Q. —. How long did you plant peas after that?
A. I guess two or three years, but I didn't get none hardly.
Q. 13. Didn't you try to raise peas last year?
A. No, sir.
Q. 14. Did you plant any year before last?
A. No, sir, I don't think I did.
Q. 15. Haven't been trying to raise any peas for the past three or four years?
A. I forget; maybe two years; two years I believe.
Q. 16. When did you last sow oats?
A. I ain't sowed any oats in three or four years.
Q. 17. You had a wheat field this year?
A. Yes, sir.
Q. 18. And you expected to get twenty bushels to the acre?
A. Yes, sir, I think fully that.
Q. 19. Did you ever raise any wheat like that down there?
A. Yes, sir.
Q. 20. How many acres did you say you had out?
A. Fourteen acres I think; thirteen or fourteen.
Q. 21. And you expected to raise 280 bushels of wheat?
A. I ought to have done it; I have done it before.
Q. 22. When was that, how many years ago?
A. Back several years ago, when I was a boy like.
Q. 23. You don't really know what hurt your wheat?
160 A. No, I don't know for certain, but we claim it to be the smoke that done it.
Q. 24. That smoke that damaged your wheat come in there the 8th and 9th of June?
A. Yes, sir.
Q. 25. Really that is the only smoke you have noticed in there this year that has done any damage?
A. I believe it is.
Q. 26. You have seen smoke in there?

A. Yes, sir.
Q. 27. But that was the only smoke in there that did any damage?
A. Yes, sir, I believe it is.
Q. 28. Have you filed any claim yet.
A. No, sir, but I think Mr. Hill has; I think he has filed one.
Q. —. Did you prepare any claim for him at all?
A. I counted the trees for him.
Q. 30. Those apple trees?
A. Yes, sir, and the peach trees.
Q. 31. Injure any peach trees in there?
A. Yes, sir.
Q. 32. How many apple trees has Mr. Hill got in there?
A. I disremember how many trees he has got; somewhere about 1,000 or 1,500, I guess. I don't recollect exactly.
Q. 33. You know that he has a good many?
A. Yes, sir.

Redirect examination by Mr. HILL:

Q. 1. I believe you stated this; that you had seen smoke in there last May?
A. Yes, sir.
Q. 2. How many times did you see it in there in May?
A. I disremember how many times I saw it there in May.
Q. 3. Was your corn or your wheat bitten along about the first of June?
A. The wheat was bitten the 8th and 9th of June.
Q. 4. How about your corn, when was that bitten?
A. 'Long in May.
Q. 5. That was before the big smoke?
A. Yes, sir.

161 Recross-examination by General FOWLER:

Q. 1. You don't really know that your corn was bitten by the smoke?
A. No, sir, I am not so well acquainted with the smoke. Something does it; I don't know what it is.
Q. 2. Do you have the kind of season out there to grow the corn, you had a late cold season, didn't you?
A. No, sir, I planted a little patch after the cold seasons was over with; I believe along about the first of June a little patch.
Q. 3. That came up about the 8th or 9th of June?
A. No, sir, it was up before that time.
Q. 4. You say that the smoke came in there on the 8th and 9th of June?
A. Yes, sir, I noticed it in there about that time.
Q. 5. You say you planted this patch of corn along about the last of May?
A. Yes, sir.
Q. 6. Wouldn't that patch of corn just have come up then——

A. Yes, sir, it was barely up.
Q. 7. When do you think that smoke come in there that injured that corn?
A. I don't know when.
Q. 8. It must have been along about the first of June?
A. No, sir.
Q. 9. Now when did you plant that corn?
A. I think I planted it in May; may have been along the first of June. I don't know just when. I saw smoke in there in May.
Q. 10. You haven't studied over that matter sufficiently to state just when that corn did get in that condition?
A. No, sir.

Mileage of witness: 40 miles.

J. S. ROGERS, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. HILL:

162 Q. 1. Where do you live Mr. Rogers?
A. Down in Gilmer County.
Q. 2. Do you live near Mr. Hinson who has just gone out?
A. Yes sir.
Q. 3. What do they call that section around there, Owltown?
A. Yes sir, Owltown.
Q. 4. Are you about the same distance that he is from the copper company plants?
A. Yes sir.
Q. 5. Have you ever been up around these copper company plants?
A. Yes sir.
Q. 6. Have you ever smelled that smoke up around there?
A. I reckon I have.
Q. 7. Have you ever seen any smoke down in this section where you live?
A. Yes sir.
Q. 8. What did it look like?
A. It looked like smoke to me, when I saw it.
Q. 9. Could you smell it?
A. Yes sir.
Q. 10. How did that smell compare with the smell of that up around the plants?
A. It compared with it pretty well, but it wasn't so strong.
Q. 11. What sort of smell did it have?
A. A sort of sulphur copper smell; smell like sulphur.
Q. 12. How long have you been living in that section?
A. I have been there for three years.
Q. 13. How long have you lived in Gilmer County?
A. All my life, forty-one years.
Q. 14. Have you seen that smoke in your section?
A. Yes sir.

Q. 15. Have you ever looked at the trees and crops after that smoke would come in there?

A. Yes sir.

Q. 16. What effect would it have on them?

A. When it strikes them it turns them kinder white like and the- wilt and begin to crisp up.

Q. 17. Have you any orchards on your place?

A. Yes sir.

Q. 18. Apples?

A. Yes sir, a few apples.

Q. 19. What effect does it have on these trees?

A. It does them the same way, very much like when
163 frost hits them.

Q. 20. Does it do the forest trees the same way?

A. Yes sir.

Q. 21. What effect does it have on the corn?

A. It does the corn the same way; it will wilt the corn and then it begins to rot.

Q. 22. The corn silk, what does it do to that?

A. It kills the silks the first thing.

Q. 23. That make- the ear smaller or large?

A. It cuts it off.

Q. 24. What about oats, wheat and rye?

A. It ruins it.

Q. 25. Do you grow any wheat, rye or oats?

A. I had some wheat.

Q. 26. How did it do?

A. It nev-r done nothing.

Q. 27. When was that?

A. This year along about the 8th and 9th of June it got that wheat.

Q. 28. Was that smoke in there then?

A. Yes sir.

Q. 29. Did you examine the wheat after that?

A. Yes sir.

Q. 30. Did it have the effect you have just described?

A. Yes sir.

Q. 31. How does the crop of wheat, rye, oats and corn compare with those you used to have eight or ten years ago?

A. Don't compare at all. One acre won't make one-sixteenth of what it used to.

Q. 32. Have you seen that smoke that you have described in there this year?

A. Yes sir.

Q. 33. How many times?

A. I don't know how many times.

Q. 34. You stated that it was in there the 8th and 9th of June, did you see it any other times?

A. Yes sir, I saw it several times.

Q. 35. Have you seen it any since that time?

A. Yes sir.
Q. 36. Was it in there in May?
A. Yes sir, and I have seen some since the 8th and 9th of June.
Q. 37. Which direction would the wind be from when you would see that smoke?
A. It would be from the North.
Q. 38. Did you raise any peas this year?
A. Yes sir, a few.
Q. 39. How did they do?
A. Didn't do no good.
164 Q. 40. Did that smoke or not, that came in there the 8th and 9th of June effect those peas?
A. Yes sir.
Q. 41. Did you see the smoke when it come in on them?
A. Yes sir.
Q. 42. Did you examine them after that?
A. Yes sir.
Q. 43. What was their condition?
A. It looked like there had been a fire or something close to them.
Q. 44. What is the condition of the forests; the timber in the forests after this smoke comes down?
A. You mean on the mountain woods timber?
Q. 45. Yes?
A. You take on the North side of the mountain there where it hits it, the leaves just crisp up and all drops off on the ground.
Q. 46. You see the leaves on the ground?
A. Yes sir; they would fall on the ground.
Q. 47. The fruit trees do the same way?
A. Yes sir.

Cross-examination by GENERAL FOWLER:

Q. 1. How many crops have you made there?
A. This is my third crop.
Q. 2. Where did you live before that?
A. I lived on what is called Turniptown back this side.
Q. 3. What kind of crop was the first you made down there?
A. Pretty fair crop.
Q. 4. That was in 1910, was it?
A. Yes sir.
Q. 5. You made oats that year?
A. No sir.
Q. 6. Didn't you sow any?
A. No sir.
Q. 7. Have any wheat?
A. Yes sir, I had some wheat.
Q. 8. Make pretty good wheat?
A. No sir, the wheat wasn't much.
Q. 9. What was the trouble?

A. I had some of the wheat in bottom land; that was pretty good, then I had some on the North side that wasn't no good.

Q. 10. Your wheat on the North side or on the South side?

A. I had some bottom land and some on the North side of the hill.

165 Q. 11. Corn pretty good that year?

A. Yes sir; I had some pretty good corn.

Q. 12. Raise any peas that year?

A. No sir.

Q. 13. Didn't try that year?

A. Yes sir, I tried all a fellow could.

Q. 14. In 1910, did you plant any peas?

A. Yes sir, I planted some beans.

Q. 15. I said peas?

A. I never made any.

Q. 16. Did you plant any peas in 1910?

A. No, I never planted any peas; I thought you said beans.

Q. 17. Did you raise any corn in 1911?

A. Yes sir.

Q. 18. Have a pretty good crop?

A. Yes sir, a tolerable fair crop; nothing like what we generally do.

Q. 19. What do you mean by generally?

A. I mean a general crop back yonder ten, fifteen or twenty years ago.

Q. 20. When was the first time that you noticed smoke damage in that country?

A. It has been several years.

Q. 21. Five years?

A. Yes sir, five years.

Q. 22. About how many years, has it been six or seven years?

A. I wouldn't say positively; but it has been several years.

Q. 23. Has it been as many as seven years?

A. I wouldn't say seven years; I know that it has been several years I have been seeing what it would do.

Q. 24. Coming down to the present year, have you seen any damage in there this year?

A. Yes sir.

Q. 25. In consequence of that smoke coming in there on the 8th and 9th of June?

A. Yes sir, and before that; smoke has been coming in there all through May.

Q. 26. Did you notice any damage until the 8th and 9th of June?

A. Yes sir, I could see that it hurt everything; take corn so high (indicating) it burned it off.

Q. 27. Did you have some cold weather along then?

A. Yes sir, we had some cold weather.

166 Q. 28. That didn't hurt your corn at all?

A. No sir, not as I could tell.

Q. 29. Don't you know that cold weather in the spring will keep corn back?

A. Yes sir; I have seen it frost bit.
Q. 30. Don't you know that cold weather will make the corn look sickly?
A. Yes sir; cold weather will yellow the corn and the smoke don't; *the* the smoke turns it white and wilts it, and when it hits the young tender corn it parches it up.
Q. 31. And you think before the 8th and 9th of June you saw that?
A. Yes sir. It parched the corn and the fruit trees and every thing else in there.
Q. 32. When did you notice smoke in there after that?
A. I have seen it a time or two since that, but I won't say when it was that I saw it.
A. 33. Did you raise any peas at all?
A. No sir.
Q. 34. Did you raise any peas at all?
A. I never did sow very many; I raise corn.
Q. 35. What kind of oats you sow down in that neighborhood?
A. We don't have very many oats through there. We sow wheat. Rust proof wheat.
Q. 36. Those winter oats or Spring oats?
A. Some sow winter oats and some Spring oats.
Q. 37. Don't those who sow winter oats always get a good crop?
A. I don't know how that is.
Q. 37. How big a place do you own down there?
A. The fellow who owns the place I am on, owns 1100 acres.
Q. 38. You have filed no claim for damages?
A. No sir.
Q. 39. Do you live on the same property Mr. George Hinson lives on?
A. Yes sir.
Q. 40. How close do you live to him?
A. About 200 yards; maybe a little more.
A. 41. You yourself have filed no claim for damages?
A. No sir, I guess that would come under the head of Mr. Hill's.
Q. 42. You all put in your claims together?
167 A. Yes sir, I*m*guess it's that way.

Mileage of Witness: 40 Miles.

J. W. WITHROW, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination.

By Mr. DRAKE:

Q. 1. How old are you?
A. Sixty-four.
Q. 2. Where do you live?
A. In Mountain Town District on Mountain Town Creek.
Q. 3. What direction is that from Ellijay?
A. That's a northwest course.

Q. 4. How long have you lived there?
A. I was born and raised in about three miles of where I now live.
Q. 5. Do you own any land in that neighborhood?
A. Yes sir.
Q. 6. How much?
A. About 500 acres.
Q. 7. Are you acquainted with the crops that grow in that section and the growing timber that grows on the mountains?
A. Yes sir.
Q. 8. In the last few years have you noticed any smoke in there?
A. Yes sir.
Q. 9. What kind have you seen?
A. Well, it's smoke.
Q. 10. What kind of smoke was it; how did it look?
A. It looked kinder like a fog. It would settle down in the fields and on the mountains.
Q. 11. Did you ever smell that smoke?
A. Yes sir.
Q. 12. What did it smell like?
A. It smelled like sulphur.
Q. 13. Have you ever seen any injury in that country from smoke?
A. Yes sir.
Q. 14. What was it to?
A. The timber.
Q. 15. What kind of varieties of timber did it affect mostly?
A. The black oak and the chestnut oak.
Q. 16. At what times did it come in there worst—at what time does it come in there with regard to the wind?
A. When the winds are from the Northeast is when it
168 comes to us.
Q. 17. When was the first time that you recollect seeing it in there?
A. Do you mean this year?
Q. 18. Any year?
A. About nineteen,—about six years ago, I think.
Q. 19. Did you see any effect of that on the timber and on the vegetation after that was gone?
A. Yes sir.
Q. 20. What was the effect?
A. The leaves turned brown.
Q. 21. When did you see it that you remember of after then, or have you seen it,—just describe in your own way how you have seen it?
A. I have seen it most every year, as far as I remember; it is generally worst about the last of August or the first of September; that's when it comes in usually.
Q. 22. Then it showed up on the leaves worse?
A. Yes sir.
Q. 23. Have you seen any smoke in there this year; if so, when?

A. It come in there on the 12th of June one time pretty heavy; and on the 13th of July and the 21st of July.

Q. 24. Did you see any smoke in there any other times this year?

A. No sir, not to amount to anything; those are the only times I noticed it.

Q. 25. Three times it was heavy?

A. Yes sir.

Q. 26. Did you notice any of the effects of it this year?

A. Not very much around me this year; I saw some leaves.

Q. 27. In 1912 or 1913, did you see any smoke in there bad; in bad quantities; if so, describe that and when it was?

A. In 1912, the worst there at my house was I think about the first of September.

Q. 28. About how bad was it,—did you see it yourself and smell it?

A. Yes sir, it injured my apple crop.

Q. 29. What effect did it have on your apples?

A. They just quit growing and didn't ripen and mature.

Q. 30. If they didn't ripen and mature, what became of them?

A. They just fell off on the ground in a few days, or in a few weeks you might say.

169 Q. 31. How much orchard have you, about how much?

A. I can't say exactly, about one thousand trees, I think.

Q. 32. What was the effect on the foliage of the apple trees?

A. It burned the leaves.

Q. 33. What else?

A. They would fall off, and then take the second growth later on in fall.

Q. 34. Have you ever, since 1912, see- it about there damage any of your crops of different kinds?

A. No, I don't think it hurt my crops so much. It hurt my vegetables; my crop of beans and peas and such as that.

Q. 35. I believe you say the wind has to be from the Northeast for it to come over on you?

A. Yes sir.

Q. 36. Do you remember a few years ago when a party of Ducktown people conducted by Mr. Sherman Reese came down to your house?

A. Yes sir.

Q. 37. Did they stop with you?

A. Four of them did.

Q. 38. Did you tell them there was any smoke damage in there?

A. Yes sir.

Q. 39. Tell what you told them?

A. I showed them some apples and I give them some to eat, and they looked at them. I showed them some that was damaged. Some of them was pretty good, and some of them was badly damaged. I didn't take them out and show them any timber.

Q. 40. You did show them the damaged fruit—?

A. Yes sir.

Q. 41. Did you talk to them about the damaged condition of the country, there or not?
A. Yes sir.
Q. 42. Do you remember the names of the people that were along?
A. Clayton, I believe was one, and Horace Smith, I think; I won't be positive; they didn't stay at my house. I wasn't acquainted with the others.
Q. 43. You mean they spent the night with you?
A. Yes sir; they asked me to let them stay all night.
Q. 44. Do you know what they were doing there?
A. No sir, I don't.
Q. 45. They didn't let you know?
A. No sir.

It is agreed by Counsel for the State of Georgia and
170 Counsel for the defendant that the witness lives 18-1/2 miles air line from Copperhill, and 21 miles air line from Isabella, in a direction West of South; nearly Southwest.

Cross-examination.

By GENERAL FOWLER:

Q. 1. I believe you have a suit against the Ducktown Co.?
A. Yes sir.
Q. 2. Pending in the Law Court at Ducktown?
A. Yes sir.
Q. 3. In what year did the damage or damages occur for which you brought that suit?
A. 1912.
Q. 4. You bring that suit this year?
A. Yes sir, this Spring.
Q. 5. Were you damaged in 1911?
A. Yes sir, but not so bad.
Q. 6. Was your apple crop damaged that year?
A. Not so bad as some.
Q. 7. Did you sue alone for damages to your apple trees?
A. No sir.
Q. 8. To all your crop?
A. Yes sir, and timber.
Q. 9. Were you damaged in 1910?
A. Yes sir.
Q. 10. I believe you said that you first noticed this smoke about six years ago?
A. Yes sir.
Q. 11. That would be 1908?
A. Yes sir, I think so.
Q. 12. What was it that you first noticed was damaged?
A. The timber beginning to die.
Q. 13. What was it you noticed?
A. The tops of the white pines begun to die then.

Q. 14. That was the first thing you noticed; the tops of the white pine?

A. Yes sir, and the chestnut oak timber.

Q. 15. Was that before you noticed any injury to your crops?

A. Yes sir.

Q. 16. What was the first crop you noticed any damage to, corn, oats or wheat?

A. No sir, mostly peas and the vegetable crop was damaged.

Q. 17. Do you remember what year that was; that was some four years ago wasn't it?

A. It was 1912 that was the worst year.

Q. 18. Do you remember what month it was that it come in there in 1912?

171 A. Yes, sir, it was the first days of September, or the last of August; right about that time.

Q. 19. That was the smoke that did the injury that year?

A. Yes sir. Really, I think that was the worst I have ever saw in there.

Q. 20. Did that last just one day?

A. Yes sir.

Q. 21. That for just a few hours?

A. Yes sir, it was in there just a few hours; it lasted until nearly twelve o'clock.

Q. 22. Can't you recollect the exact date when that occurred?

A. No sir.

Q. 23. But it was the last days of August or the first day of September?

A. Yes sir, in 1912.

Q. 24. What was the first damage from smoke that you noticed during that year?

A. That was the first; that is why I noticed particular when it was; it was so heavy and smelled so strong.

Q. 25. During the year 1911, what month did you notice Smoke in there in?

Q. It was the worst in August.

Q. 25. Do you remember what day in August?

A. No sir, I can't state.

Q. 26. What was hurt in 1911?

A. It hurt my vegetable crop mostly. My corn wasn't damaged a great deal.

Q. 27. Which vegetables did it specially hurt?

A. My peas and bean-, tomatoes and cabbage.

Q. 28. How many peas did you have?

A. I don't know exactly; I generally sow them to make forage.

Q. 29. How many acres did you sow?

A. Not but a few; four or five I guess.

Q. 30. Did you raise any peas that year?

A. No sir, we didn't get no peas much; the leaves dropped off.

Q. 31. Do you mean that in 1911 it killed your peas absolutely?

A. No sir, not absolutely; they turned brown and wouldn't mature.
Q. 32. You did get some for feed?
A. Yes sir, what leaves there was left, I did.
Q. 33. You used that for feed?
A. Yes sir.
172 Q. 34. What else was injured besides your peas that year?
A. That's all I remember; the beans and our vegetables.
Q. 35. Beans in the garden?
A. Yes, sir, and in the corn field.
Q. 36. You were just raising a few beans for your own family use?
A. Yes, sir.
Q. 37. You wasn't raising beans to sell?
A. No, sir, I hardly ever do.
Q. 38. Did you raise the beans in the corn field, that you used?
A. Yes, sir.
Q. 39. It didn't destroy your bean crop, did it?
A. No, sir, not entirely.
Q. 40. That was all that was injured in 1911, your peans and beans?
A. That's all I remember, and the timber was burned some.
Q. 41. There wasn't any trees killed, was there?
A. No, sir, I don't think they died.
Q. 42. What was injured in 1910?
A. I can't tell you now.
Q. 43. In 1909, was there any injury at all?
A. I can't tell you now.
Q. 44. In 1913, did you suffer any injuries from smoke?
A. No great deal.
Q. 45. What special complaint have you got against the company for 1913?
A. I haven't got anything, only I think it injured our vegetables.
Q. 46. Which vegetables?
A. Some of the vegetables; it didn't kill them all.
Q. 47. Did you plant any peas in 1913?
A. No sir.
Q. 48. Sow any oats in 1913?
A. No, sir.
Q. 49. How long has it been since you raised any oats?
A. I raised some this year.
Q. 50. Got a pretty good oat crop?
A. Pretty fair.
Q. 51. This Spring or last Fall?
A. Spring.
Q. 52. Do you raise any winter oats there in your section?
A. No sir.
Q. 53. Ever try?
A. No sir; I never sowed any there in the winter.
Q. 54. Isn't that the reason you don't raise oats?
A. I don't know sir, about that.

Q. 55. You don't know it to be a fact that East Tennessee, Southwest Virginia and Kentucky have entirely quit raising
173 Spring oats, because they can't raise them, and have gone to raising winter oats altogether, do you know that to be a fact?

A. I have heard it?

Q. 56. Why don't you people down here raise winter oats?

A. The frost would kill them.

Mr. DRAKE: We except to the question and answer as being irrelevant and immaterial.

Exception overruled. Appeal prayed and granted.

Q. 57. You are quite a distance South of Tennessee, Kentucky and Virginia aren't you?

A. Yes sir.

Q. 58. The climate is warmer in your section than it is up in that country, isn't it?

A. I suppose so; I have never been there.

Q. 59. During the present year when did you notice any smoke at your place?

A. On the 12th of June; 13th of July and 21st of July.

Q. 60. How long was it in there on the 12th of June?

A. It generally comes in there and stays about—it is generally there in the morning and sets up about nine o'clock——

Q. 61. I am talking about this special date, when it come in there?

A. It generally stays in there two or three hours.

Q. 62. Did it hurt anything on that day?

A. I can't say that it did any great deal of damage.

Q. 63. On the 13th of July, much smoke there that day?

A. Yes, sir, that was the heaviest one I saw this year.

Q. 64. What did it hurt?

A. I couldn't see anything at my place.

Q. 65. Injure anything on your place on the 21st of July?

A. No, sir, I couldn't see that it did.

Q. 66. Last year, did it injure you or not last year?

A. It was 1912 that was the worst I have had.

Q. 67. When did the smoke come in there in 1912 and injure you, what month?

A. The last of August or the first of September; the last
174 days of August, or the first of September.

Q. 68. Was it your winter apples that it injured?

A. Yes sir, what we call the Limber Twig.

Q. 69. It didn't hurt them until they were nearly mature?

A. No they wasn't grown quite; they had been turning red, but they didn't turn any more.

Q. 70. Kill the tree?

A. No, sir, the tree is alive yet.

Q. 71. Do you know whether or not dry weather or something of that kind caused these apples to quit growing and to fall off the trees?

A. Not all of them; a good many of them did.

Q. 72. The apples didn't fall off?
A. Yes sir, they dropped off shortly afterwards and rotted.
Q. 73. How many trees did you have at that time?
A. I had about one thousand.
Q. 74. Not all of them winter apples are they?
A. Practically all; but not all.
Q. 75. All of them Limber Twigs?
A. No sir, not all.
Q. 76. What per cent of them are Limber Twigs?
A. I expect 70% to 80% are Limber Twigs.
Q. 77. How is your apple crop this year?
A. Fairly; looks pretty well.
Q. 78. How was it last year?
A. Wasn't much account lasy year; wasn't no good much.
Q. 79. Frost kill it?
A. Yes, sir.

Mileage of witness: 48 miles.

A. E. SHARP, sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. How old are you Mr. Sharp?
A. 47.
175 Q. 2. Where do you live?
A. In Gilmer County.
Q. 3. What point in Gilmer County?
A. In the Turniptown District, eight miles Northwest of Ellijay.
Q. 4. How far do you live from J. W. Withrow who has just testified in this case?
A. One mile.
Q. 5. Which direction?
A. Northwest. His land and mine corners.
Q. 6. How much land do you own *on* that neighborhood?
A. 250 acres.
Q. 7. What is your present occupation?
A. I am a woodsman?
Q. —. How long have you been engaged as a woodsman?
A. Ten years.
Q. 9. In whose employ are you at present?
A. Shippen Bros. Lumber Company.
Q. 10. Have you ever held any position with the State?
A. Yes sir, I have been working for the State for some time.
Q. 11. In what capacity?
A. I have been kinder looking over the woods and getting up testimony and so on for the State.
Q. 12. Have you any official position with the State?
A. Yes sir, I am game warden.
Q. 13. How long have you lived in that community where you are now living?

A. All my life.

Q. 14. Have you, Mr. Sharp, in your experience as a woodsman been over much of the mountain country in Gilmer and Fannin Counties, Georgia; if so to what extent?

A. I have.

Q. 15. Please state some of the parts of North Georgia that you have visited?

A. I have visited pretty well over Gilmer, Fannin and Murray Counties; the mountainous portions; some in Union; some in Lumpkin; but Gilmer, Fannin and Murray, I have been pretty well over the mountain part of it.

Q. 16. In what ways have you traversed these counties that you name?

A. I have gone in different ways; on horse back and in buggies.

Q. 17. Have you always confined yourself to the roads in going through the country?

A. No sir, I did not.

176 Q. 18. How then, did you go?

A. I would go through jusy any way over the trails, and in places where there wasn't any trails.

Q. 19. In your work, what was part of your duties as woodsman?

A. Looking after the timber of the Shippen Bros. Lumber Co.; their lands and timber and so on.

Q. 20. In looking after that, what did you do?

A. I went over their lands and looked to see if any one was trespassing on them in any way.

Q. 21. In all that work of ten years, do you think that you are familiar with the character of the timber that grows in these counties, its habits, etc.?

A. Yes sir, I think so.

Q. 22. Have you, in your travels through these counties in the last ten years seen any smoke?

A. I have.

Q. 23. What kind of smoke have you observed in this section?

A. I have observed different kinds of smoke; I have seen smoke that come from the houses; I have seen smoke that come from places where they burn coal, and I have seen that Ducktown smoke.

Q. 24. Can you tell that kind of smoke when you see it and observe it?

A. Can I tell that kind of smoke?

Q. 25. Yes, can you tell it from the other?

A. Yes sir, there is a difference in the color of it.

Q. 26. Did you ever smell it?

A. Yes, sir.

Q. 27. At what points in Fannin County have you seen this smoke?

A. I have seen it from different places.

Q. 28. Name them?

A. I don't know whether I could name them all or not. I have saw it from Barnes Mountain.

Q. 29. In what part of Fannin County is that?
A. That would be in a Northwestern Direction from here.
Q. 30. How many times have you observed it from that point?
A. Twice only.
Q. 31. Name some other place?
A. I have seen it from Granny Marr mountain.
Q. 32. How many times did you ever see it over there?
A. Twice from there; two different places, but the same
177 day.
Q. 33. Any other place?
A. I saw it from the Cow Pen; that is right on the line between Murray and Fannin County.
Q. 34. Which way from Blue Ridge where we now are?
A. That would be just about, something like near West from here.
Q. 35. Is that a very high mountain there?
A. Yes sir, it's a high mountain.
Q. 36. How much elevation is there at that point?
A. 4167 feet.
Q. 37. Looking from that point towards the copper companies, in which direction were they?
A. A little East of North.
Q. 38. How far from that point to the plants?
A. On an air line you speak of?
Q. 39. Yes?
A. I would say about ten miles; twelve maybe, somewhere along there; that is a rough guess. I have never looked at the map.
Q. 40. Could you see the plants of these companies from there?
A. Yes sir.
Q. 41. Could you distinguish the two pla-ts separately?
A. I could.
Q. 42. Could you see the smoke coming from the two plants separately?
A. Yes sir.
Q. 43. In what direction did you observe this smoke coming?
A. I saw it from the points I have given in different directions. I have seen it go in a Northwest direction; then go Southwest and then in a Southeastern direction.
Q. 44. How far could you distinguish the two columns of smoke?
A. Not very far. I suppose that maybe it would go several miles; that is a few miles anyway; it didn't look to me like it went very far.
Q. 45. From there would you see it coming Southwest?
A. Yes sir, you could see it coming southwest. If it was coming directly towards you it would hide the plants from view and you couldn't see them because the smoke would be so thick; but when the smoke is going from you, you can see them all right.
Q. 46. When was the last time you were up there and saw
178 smoke from these plants coming over into the State of Georgia?
A. You mean Cow Pen mountain?
Q. 47. Yes?

A. Cow Pen was some little bit back; the other places, one of them just last week.

Q. 48. From what other points have you seen it?

A. Another place I saw it was a little Northwest of Epworth at a place called Burnt Church.

Q. 49. Is that a mountain?

A. It's a hill or ridge like.

Q. 50. From what other places have you seen the smoke come over into Fannin County?

A. I don't know. There was several other places I saw it during that trip, but I wasn't acquainted through there.

Q. 51. Have you ever been on Flat Top; if so, when?

A. Yes, sir.

Q. 52. Where is that point at?

A. That will be Southwest of here.

Q. 53. Which way from the plants?

A. It would be South; maybe a little West of South; I don't know exactly; something near that.

Q. 54. About how much elevation has Flat Top got?

A. I can't say as to that.

Q. 55. Is that pretty low, or is it high?

A. No, sir. it's pretty high.

Q. 56. Have you seen it from any other points in Fannin?

A. Yes, sir, in Gilmer County; Flat Top is right at the line.

Q. 57. Do you recall any other points you have seen it from in Fannin County?

A. No, sir, I don't believe I can remember any more. I saw it from several different places there traveling along the road there but I wasn't acquainted and didn't know the names of the places along there.

Q. 58. In Gilmer County, what points or mountains have you stood on and seen it in there?

A. I have seen it from Flat Top back here and Aria mountain.

Q. 59. Where is that?

A. It is a little South East; a little East of South.

Q. 60. From the plants, you mean?

A. Yes, sir.

Q. 61. Which way is that from Ellijay?

A. Aria mountain? It's a little east from there.

179 Q. 62. When you are in Ellijay, which direction is it to the Aria mountain?

A. It's a North direction; a little East of North.

Q. 63. Does it lie East or West of the L. & N. Railroad that runs through Gilmer County?

A. East.

Q. 64. At how many points on that mountain did you stand and observe that smoke?

A. I don't know but about twice that I remember of.

Q. 65. Have you seen it from any other mountains East of that Railroad?

A. Yes, sir, on the East Point of the Blue Ridge, East of the Railroad.

Q. 66. How far was that from these plants?

A. I would say that it must be something like 18 or twenty miles.

Q. 67. That a high mountain or a low mountain?

A. High.

Q. 68. Do you know the highest point you saw it?

A. No, sir.

Q. 69. Have you stood on any other mountains West of the L. & N. Railroad in Gilmer County, besides the Flat Top and seen this smoke?

A. I don't know that I have, but there is different places along the Flat Top that takes in and embraces a good big section of the country. There are several places on the Flat Top, and the same way on the Cow Pen; different ranges you can see it from.

Q. 70. How many miles is that long?

A. The Cow Pen, we call it from four to six miles long.

Q. 71. How about Flat Top?

A. Well, Flat Top is three or four miles, we call it.

Q. 72. Do you know where Rocky Face is up near Cherry Log?

A. Yes, sir.

Q. 73. Have you ever been on that mountain?

A. Yes, sir.

Q. 74. Ever see any smoke from there?

A. Yes, sir.

Q. 75. Is that East or West from Cherry Log?

A. East.

Q. 76. Please describe the appearance of that smoke looking at it from these different points, just how it would rise from these stacks at different times?

A. It rose out of the stacks there, and if there was a good heavy current of air it wouldn't rise very high from the stacks
180 before it mixed together; if there wasn't no air current it will rise a number of feet, and then turn off.

Q. 77. What do you mean by a number of feet; how many feet?

A. Looking at it from that distance it would look like it went up something like a hundred or two feet almost perpendicular.

Q. 78. Did you observe it at various times?

A. Yes, sir.

Q. 79. How about observing it break off pretty close to the stack; have you or not seen that at various times?

A. Yes, sir.

Q. 80. At various times you have seen that?

A. Yes, sir.

Q. 81. And from various points?

A. Yes sir.

Q. 82. In your inspections as woodsman, did you observe any—do you know what smoke damage is when you see it?

A. Yes, sir.

Q. 83. Have you observed any of it in your work?

A. Yes, sir, I have.

Q. 84. When was the first that you remember having seen?

A. Well sir, about the first that I remember noticing was something like five to seven years ago.

Q. 85. Where was it?

A. The first that I every remember having seen was right here close to this place, Blue Ridge. I have seen it all along in Gilmer, Fannin and Murray Counties ever since then in certain places and sections.

Q. 86. Have you made any tours of inspection this year?

A. Yes sir.

Q. 87. To what points did these tours carry you and when were they made?

A. I made one about three weeks ago into the East or Ellijay into the Arnold Mountain, and I made two or three tours around there in Gilmer County back in this direction (indicating) from Ellijay, and I made some to Potato Patch mountain which*m* is Southwest of here. Then, last Sunday was a week ago I went back in here, Northwest of here into this place I told you about, Barnes Mountain, and that country in there. I work that country pretty often, and then in Gilmer County on Jack River plum to the Tennessee line. I have been all through them mountains.

181 Q. 88. Do you know where Fightin' Town Creek is?

A. Yes sir.

Q. 89. Did you or not cross that on that trip?

A. Yes sir, I crossed at the Southwest there, very near the headwaters.

Q. 90. This trip, you say was made about three weeks ago?

A. A couple of weeks ago.

Q. 91. Did you see any smoke injury on that trip?

A. Yes sir.

Q. 92. Where was it; describe it please?

A. I found some of it down from Epworth. When I turned a West course I didn't go but a mile or two before I begun to strike it. I found that whole country affected more or less. I found some of the sections not effected this year, but they have heretofore; they showed dead branches and tops. I found that to the Southwest of Blue Ridge, there on Barnes Mountain and from there all back in North into the Granny Marr.

Q. 93. All up in that Fightin' Town Creek country, and these mountains you have just described, how far would you say they were from the Tennessee Copper Company and from the Ducktown Copper Company's plants?

A. I suppose around in some of these mountains it would be from five to seven miles; maybe in some places a little closer, and it kept on getting in closer until we got in there; maybe the furtherest point was about eight miles; then coming on down into the Georgia side, it didn't look to be more than three or four miles.

Q. 94. How much time did you spend on that trip?

A. About a week.

Q. 95. Was there much or little smoke damage in there.

A. I saw a great deal of it.

Q. 96. Was there much appreciable damage?

A. There was.

Q. 97. How many trees would you estimate that you saw damaged in there on that trip?

A. That would be impossible to tell; there was some appreciable damage on nearly all of them. I will say the bigger half of them.

Q. 98. How many miles of territory in Fannin County, Georgia, did that cover?

A. It must have been something like, where we traveled, eight or ten miles North and South.

182 Q. 99. How much East and West?

A. I saw the smoke damage as far as I went; I would say from Four to Five Miles.

Q. 100. You inspected a strip of land eight or ten miles North and South and four or five miles wide?

A. Yes sir; from the time it took us to travel over it there was that much, anyway.

Q. 101. What varieties of the forest timbers are most easily effected by this sulphur dioxide?

A. Well sir, black oak, black jack, hickory, chestnut, chestnut oak and persimmon.

Q. 102. What are the visible effects from recent smoke injury to this class of forest timbers?

A. The recent effect is they all crisp up and turn brown like, on the side of the mountains, something similar to frost bite, but not quite so dark; part of the leaves crisp up and brown. Some of the leaves have a part green, and some of them the leaves are all killed.

Q. 103. Have you seen any smoke anywhere else this year?

A. Yes sir.

Q. 104. Whereabouts?

A. In Gilmer County.

Q. 105. Whereabouts in Gilmer County?

A. In the Mountain District.

Q. 106. That the district where you live?

A. Yes sir.

Q. 107. Please describe the conditions there?

A. In that section there it killed the potatoes, a great many of them. I think in that section it killed pretty much all of them, and then on the timber you can see the leaves have turned white and then brown like you will see about in other sections. Back East of Ellijay it is worse than back West.

Q. 108. You say East of Ellijay, is that in the Turnip Town country?

A. Yes sir.

Q. 109. How far from the Arnold and the Northcutt orchards?

A. I found the effects right around and in the orchards.

Q. 110. You know where this orchard is?

A. Yes sir.

Q. 111. When were — there?

A. About three weeks ago, and about five weeks ago; I have been there twice.

Q. 112. When you were first there what conditions did you observe?

183 A. I found that the orchard had been effected by the smoke to a considerable extent; the leaves all crisped up and turned up.

Q. 113. That you say, was five weeks ago?

A. Yes sir.

Q. 114. Do you remember the date of the month, as to what time in July it was?

A. It must have been along about the first of July when I was first there.

Q. 115. What was the condition of these trees generally?

A. A good portion of them were effected by the smoke; the leaves was all crisped up and turned up, and they looked like an apple from the distance; the edges of the leaves was burned and turned under.

Q. 116. What effect did it have on them with respect to the leaves falling; anything like that?

A. Yes sir, I saw a good many of the leaves down, and I noticed that the undergrowth hadn't grown any hardly this year there.

Q. 117. You mean the shoots?

A. Yes sir.

Q. 118. How long had the young shoots grown?

A. Some of them had grown out maybe a foot; most of them only a short distance.

Q. 119. How long would an apple shoot grow, a healthy normal one located in a similar soil; with similar atmospheric conditions that didn't have any smoke applications?

A. They would grow about eighteen inches, and maybe longer.

Q. 120. You spoke of making two trips, what condition did you find it in the second trip?

A. I found it on the last trip that more trees were effected; a good many trees were effected that wasn't when I went there on the first trip. I found it in a worse condition on the second trip.

Q. 121. Have you been up there any time and see any smoke in there?

A. Yes sir, the last trip up there three weeks ago I saw smoke there and smelled it.

Q. 122. Who was with you on that trip, if you know?

A. Mr. Clark from Blue Ridge; the two Mr. Shippens and
184 two of the Hinsons; I think maybe three of the Shippens; I think Mr. Frank Shippen's son was along, and the two Hinsons.

Q. 123. Those were the gentlemen who were in here today to testify?

A. Yes sir, I suppose they testified; I saw them in here in town today.

Q. 124. Describe the appearance of the foliage on these trees three weeks ago, as compared with your first trip?

A. The first time I was there it was just beginning to show up; some of the leaves was pretty brown and was dropping off considerable. The last time, the trees that was effected between the first time and the second time looked about like the trees did the first time. The trees I saw the first time looked like the smoke had been in there pretty bad. So did the trees that wasn't hurt the first time.

Q. 125. You mean the trees that was bit between the times you were there?

A. Yes sir.

Q. 126. Did you examine the forests there near that Arnold orchard to see if there was any smoke injury?

A. I did.

Q. 127. What did you find?

A. I found the smoke injury the same as I found it elsewhere. The leaves had turned brown some of them, and had crisped up like the others.

Q. 128. What has been your observation with reference to that smoke as to different localities and in the same neighborhood, did you observe any difference in the conditions in the same locality?

A. Yes sir; there are some localities where it is a great deal worse than in others; they have it worse some years than other years; it depends on the air currents; sometimes we will have them from the same direction for a whole summer; then the smoke will go into some sections and settle down, and maybe right in the center you will find some not damaged. I have saw it back yonder several years ago where it would kill corn when it was young; it would kill one stalk out of a hill and leave the other one. I have saw that several different times.

Q. 129. What has been your observation with reference to
185 the Hemlock timber in this North Georgia section adjacent to these copper plants?

A. It is effected too.

Q. 130. Do you know whether or not Hemlock is easily effected by the smoke?

A. Yes sir, it is. It is very easily effected. White Pine too.

Q. 131. Speaking especially with reference to Hemlock, do you know how this country down here was say twenty years ago before any smoke ever come in here, with respect to Hemlock, whether there was much or little.

A. In certain section- I do. Twenty years ago I wasn't as well acquainted with this country as I am now.

Q. 132. What parts were you familiar with twenty years ago?

A. Southwestern Fannin, Gilmer and Murray.

Q. 133. Was there much or little white pine in those sections at that time, and Hemlock?

A. Yes sir, there was a great deal.

Q. 134. Have you observed any change in these conditions, and if so, what caused it?

A. There is a great deal of change in it, especially in regard to

Hemlock. It is nearly all killed or dead. The white pine is dying too. There has been quite a lot of the white pine cut out, and there is quite a lot of it in the sections where — has been no milling that is dead.

Q. 135. What about the Hemlock, has that been milled out?

A. No sir, the Hemlock was never milled out; it has died out.

Q. 136. Do you know what killed it?

A. The smoke killed it. I don't mean to say that the smoke killed every tree, but the majority of it.

Q. 137. To what extent has been the killing of it in North Fannin County?

A. It has been about killed. Back in those sections of the country where I was, it has been about two-thirds of it killed, or more.

Q. 138. On Flat Top Mountain, did you observe the timber there?

A. I did.

Q. 139. What is its condition; is it effected there or not?

A. It is in some places, but not so bad as it is in the North part of Fannin county.

Q. 140. Do you know how far Flat Top mountain is from these plants; about how far?

A. On an air line course it can't be more than twelve or fifteen miles.

186 Q. 141. Have you observed the condition of the timber on the sides of the mountains facing these plants, and on the sides facing the other way? If so, what is the condition?

A. Well, the damage there is more on the side facing the plants.

Q. 142. Generally speaking has that been your observation in that regard?

A. Yes sir, generally speaking it is that way; while I have seen some damage where it comes through the low gaps, it is, generally speaking, worse next to the furnaces.

Q. 143. On the side fronting the plants?

A. Yes sir.

Q. 144. Speaking about crops and gardens, have you observed that growth in this country for the past few years?

A. Yes sir, I have.

Q. 145. What have you observed with respect to smoke on that?

A. It is hurting it considerable.

Q. 146. In what way?

A. It kills it. I have seen the cabbages killed, and the peas, it kills them every year; and pototoes; it kills them too. In all sections we will find that they can't raise any potatoes to amount to anything. We can't raise peas at all.

Q. 147. How long has it been since you could raise peas?

A. Some five to seven and eight years.

Q. 148. Beans, what about them?

A. They are no good any more.

Q. 149. Has it effected the orchards at your home and in that neighborhood?

A. Yes sir.

Q. 150. In what way?

A. It effects the foliage on them; effects the apples; they don't grow and mature like they used to. I effects them in the growth.

Q. 150. And it also effects the fruit?

A. Yes sir.

Q. 151. Have you described how it effects the apples, if you have I don't remember?

A. Well sir, it blackens one side of the apple from the time it is up the size of the end of your thumb until they are about half grown; they will crack and burst open and drop off, and we get but little fruit. In some places way back up on the mountain
187 there in Gilmer County there is some good fruit, in places protected by the mountain.

Q. 152. Do you know whether or not any apples were raised right around there, or do you know?

A. Yes sir, as a general proposition, right there in that section you could.

Q. 153. Naturally, how is that country for apples?

A. It is good.

Q. 154. Have you observed the effect of the smoke on corn when it was up and tasseling, and if so how?

A. I have seen it when it was up and tasseling, and the silk would be killed, and the tassels turn white.

Q. 155. What effect would that have on the corn crop?

A. It is injurious to the corn crop and would kill it. When it comes in there it will kill the silk of the corn, and if the silk stays killed it don't make anything worth anything. Not near as good as it used to be.

Q. 156. Have you observed the effect on oats, wheat and rye?

A. It effects it about the same way. It effects the bloom or the pollen. Back there in one section of Gilmer County they don't raise any wheat at all any more.

Q. 157. That fine rich land for wheat?

A. Yes sir, we used to raise good wheat there, or anywhere in that section.

Q. 158. Who was with you on that trip to Flat Top mountain two or three weeks ago?

A. I was there by myself.

Q. 159. Were you at any time on the mountains with Mr. Lee Worsham and the Shippens?

A. No sir, I wasn't with them.

Mr. DRAKE: We will want to identify some locations by Mr. Sharp of some photographs that have been taken and are now in Atlanta; we will have to put him up again for that purpose and for that purpose only.

Cross-examination by General FOWLER:

Q. 1. How long have you been working for Shippen Bros.?

A. About ten years.

Q. 2. You are their woodsman?

A. Yes sir.

188 Q. 3. You have been their woodsman all that time?

A. Pretty near all the time.

Q. 4. I believe they have about 108,000 acres of land in North Georgia?

A. Something like that.

Q. 5. That extends over what counties?

A. Gilmer, Fannin, Murray and possibly some in some other county; but the principal part is in those three counties.

Q. 6. It is your duty to look after the timber on all of those lands?

A. Yes sir, the best I can.

Q. 7. That requires you to go over the land from time to time to see whether or not there are any squatters or anything of that kind?

A. Yes sir.

Q. 8. I believe the Shippens have been engaged in litigation with the copper companies for some time, at least with the Ducktown Company?

A. I suppose they have for some time; that is for a year or so.

Q. —. They have for two or three years, haven't they?

A. Not that I remember of.

Q. 10. You know that they have a suit pending in the court at Knoxville, don't you?

A. Yes sir, I think so.

Q. 11. Has it not been pending for eight years or over?

A. Not to my knowledge. I know it has been for something like a year or so ago.

Q. 12. You testified in that case, didn't you?

A. Yes sir; that was the first I knowed of it.

Q. 13. That case has been heard, but not passed upon by the judge?

A. That is my understanding about it.

Q. 14. You looked up practically all of the evidence for the Shippens didn't you?

A. No sir. Not all of it.

Q. 15. You looked up the greater part of it, didn't you?

A. I helped to get up the testimony, but I don't know how much there was in it.

Q. 16. You scoured the whole country over to get witnesses in that case, didn't you?

A. No sir, I can't say that I did. I went to look some of them up and helped some on it. I didn't come to Fannin here to

189 get any witnesses.

Q. 17. You knew that you were going to testify yourself sometime before you did testify?

A. I did some little bit before. I don't know that I knew of it a long time beforehand.

Q. 18. Hence, when you were going through the country and through the forests, you were looking for evidence against the Ducktown Company.

A. Certainly I was; I was on that business.

Q. 19. You tried to see every bit of the damage that had been done by smoke?

A. I was looking at the damage.

Q. 20. You were really trying to see all you could so that you could make it as strong as possible?

A. Yes sir, I tried to make it as strong as I could make it reasonable.

Q. 21. I believe you stated that you were also employed by the State of Georgia to look up evidence?

A. I didn't say employed by the State to look up evidence; if I did, I made a mistake. I said I was working now getting up evidence in this case; that is what I meant; I went over the country and looked over the situation as I have stated here.

Q. 22. Isn't it the truth that the State of Georgia employed you to look up the evidence?

A. No sir.

Q. 23. Who got you to look this evidence up?

A. I can't answer that question.

Q. 24. Who was it that asked you to look up this evidence?

A. Me and Mr. Drake had a talk; him and Mr. Shippen talked about it; both of the Shippens, and I don't know that any one person employed me to do this work.

Q. 25. Who was it that got you to go and get up the evidence?

A. Well sir, it was as much my own talk as anybody else's.

Q. 26. Are you specially interested against the Ducktown Co.?

A. I am so far as I believe they are doing damage; I am interested just like any other citizen.

Q. 27. Do you own any land anywhere?

A. Yes sir.

Q. 28. How much?

A. 250 acres.

190 Q. 29. Where is that?

A. In the mountain district.

Q. —. Has that been damaged any?

A. Yes sir.

Q. 31. How much?

A. I can't say as to that.

Q. 32. Have you put in any claim for that?

A. I haven't.

Q. 33. It not enough for you to put in a claim for?

A. Yes sir, if I was able to put the thing through, but I am not able to put in any claim.

Q. 34. You haven't filed any claim with this board?

A. No sir.

Q. 35. It don't cost you anything to put in a claim with this board does it?

A. No sir, and you don't get anything.

Q. 36. Thes- arbitrators decide against you?

A. No, but they haven't got but $16,000 and that's always gone before our county gets any.

Q. 37. Isn't it a fact that when a claim is made they always go and inspect the various places?

A. I don't know sir; I never filed any claim.

Q. 36. Going back to your action in getting up this testimony, did Mr. Shippen ask you to go and get this testimony?

A. I don't know that he asked me about it in particular.

Q. 39. He suggested it to you didn't he?

A. Yes sir.

Q. 40. Did you go at his suggestion?

A. Partly I did, and partly on my own accord.

Q. 41. How much time have you spent in looking up testimony in this case against the Ducktown Company?

A. Not much.

Q. 42. How much?

A. Not over a couple of weeks all told.

Q. 43. A number of the witnesses appearing here are from the various counties; their names have been given to counsel for the State by you; is that true?

A. No sir.

Q. 44. How many names have you given him?

A. To tell you the truth, I don't know that I have given him one.

Q. 45. To whom did you give the names,—to Mr. Shippen?

A. No, I don't now that I did. I may have given him some of the names. I could have went further with it, and I expect I have talked with Mr. Frank Shippen about it, but I really can't
191 say whether I suggested any names to him or not, but I may have give him some names.

Q. 46. You traveled quite a large part of Gilmer and Fannin County, and some in Murray, conversing with people and getting up their names?

A. Yes sir, but I didn't travel over Murray.

Q. 47. You did travel over Gilmer and Fannin County conversing with people to find out what they would swear?

A. I did.

Q. 48. Then did you give that information to anybody?

A. Yes sir, in this way. I would talk with persons where they were effected and find out what they said; I don't know that I give the names of any particular witnesses. I have told Mr. Shippen and also Mr. Drake what these people said about their corn, potatoes and their timber, and I left it with them to say whether they wanted them or not.

Q. 49. You gave their names to either Mr. Shippen or Mr. Drake?

A. Part of them; a few of them, I did.

Q. 50. You told them where the affected districts were?

A. Yes sir. I made a trip through Fightin' Town and I told Mr. Frank Shippen about some potatoes being killed, and told him who it was, and that possibly they might make a good witness, and that's about all I remember of, while I might have furnished him with more than that.

Q. 51. How many trips have you made looking after testimony in this case?

A. I went in all about five trips, I reckon.

Q. 52. Anybody go with you?

A. I think three or four of the trips Mr. Shippen went with me. I went out to Arnold's orchard twice; went through Board Town one trip and one trip through 'tater patch, and I think Mr. Shippen was with me on them trips.

Q. 53. How many of the Shippen Brothers are there?

A. Two. Mr. Frank Shippen has got a son; he went with us one trip.

Q. 54. When I speak of Mr. Shippen, I mean Mr. Will Shippen?

A. Mr. Will Shippen was with me on one trip.

Q. 55. Then, the Shippens were with you on all of your trips but one?

A. All but two.

192 Q. 56. Who else was with you, on these trips besides the Shippens?

A. The second trip I made to Arnold's orchard there was two or three of the Shippens; Mr. Will and Mr. Frank Shippen and Mr. Frank Shippen's son, and the two Hinsons; that is the time we went through the orchard.

Q. 57. You wasn't with Dr. Hedgecock on his trips were you?

A. No sir.

Q. 58. Now, Mr. Sharpe you have mentioned a number of points from which you viewed the stacks of these companies, now, as a matter of fact, you couldn't see the stack of the Ducktown company from near all of these points, could you?

A. Here's what I stated; if I could see the smoke coming out of the stacks, I stated it. I couldn't make out the whole stack from some of these points mentioned, but there is a point on Frog Mountain on the edge of the Tennessee line where you can see the whole stack.

Q. 59. From these other points you couldn't see the stacks of the Ducktown Company at all?

A. Yes sir, the top of it.

Q. 60. With your natural eye?

A. Yes sir.

Q. 61. How much of it could you see?

A. Not much of it.

Q. 62. Do you know how large the top of the stack of the Ducktown Company is?

A. No sir.

Q. 63. Don't you know that it is only four feet in diameter?

A. No sir.

Q. 64. You pretend to say that you can see the top of that stack from the top of those mountains?

A. Yes sir, I pretend to say that I can see the top of it. You could see the whole of the stack from nearly all of these points I have mentioned if it wasn't for the houses.

Q. 65. You are dead sure of that?

A. Yes sir, and there ain't any question about — and you will find plenty others that have seen it.

Q. 66. You have seen it from that big hill South and West of it?

A. No sir, a little knoll there South or Southwest; there is a pretty large hill back West of it. If I remember right the plants set back in this direction (indicating) and the hill is in Georgia.

193 Q. 67. You don't know the difference between the furnace stack and the power stack?

A. Yes sir, I think I do.

Q. 68. Don't you know that that smoke was coming out of the power stack?

A. No sir, I don't. I saw it coming out of the furnace stack.

Q. 69. Didn't you see smoke coming out of the Boro-Boro mine?

A. Yes sir, but I didn't see that as plain as I could see the Ducktown stack.

Q. 70. How many times have you stood off and seen the smoke coming out of half a dozen stacks.

A. More than that.

Q. 71. A dozen.

A. Yes sir, more than that.

Q. 72. Tell from what points on the mountains you have stood and have seen the smoke coming from the stacks of both of these companies?

A. Well, there is one point on Granny Marr mountain that you can see both the stacks· then there is a point on Barnes mountain you can see the top of the stack; see the smoke boiling out of the top of the stack; you can see the same thing on Cow Pen; the same thing on Frog Mountain; you can see the same thing right at the Tennessee line; you can see the smoke after it leaves the stock.

Q. 73. Now as a matter of fact, wasn't there mountains between you and the stack?

A. Part of it, yes sir.

Q. 74. You have seen different kinds of smoke in the mountains?

A. Yes sir.

Q. 75. Have you ever seen any smoke over there from the power plants or from the Boro-Boro mine?

A. I suppose so.

Q. 76. Don't you know?

A. I probably have.

Q. 77. What kind of smoke is that?

A. It's a black smoke; then there is some white looking smoke; it don't look like this smoke; it's not the same color.

Q. 78. What is the difference?

A. I don't know as I could say. When I would see the other smoke you could barely distinguish it from the other. I know the smoke when I see it.

Q. 79. Doesn't the mine produce more smoke than the furnace?

A. I can't say that it does.

194 Q. 80. Do you know what makes the smoke at the mine?

A. I don't know.

Q. 81. Is it coal smoke?
A. Yes sir that is coal smoke there at the mine, or what they said was the mine.
Q. 82. And coal smoke at the power plants?
A. Yes sir.
Q. 83. Does that coal smoke ever fly over into Georgia?
A. I should think so. It all comes from the same direction.
Q. 84. Have you ever seen any of that smoke in Gilmer County?
A. I don't know sir.
Q 85. You have seen smoke that you thought came from Copper Hill and Isabella?
A. I thought so, yes sir.
Q. 86. You don't know whether it did or not?
A. I have the best reasons to believe that it does.
Q. 87. You have never been at the top of the mountain and see it come into Gilmer County?
A. Yes sir; come into Georgia and into Gilmer County.
Q. 88. When and where?
A. Last Thursday or Friday was a week ago.
Q. 89. Last Friday was a week ago was the only time you ever saw it go into Gilmer County?
A. Yes sir, and I think I will be able to show beyond any question that it did it?
Q. 90. What day of the month was it?
A. If I am not mistaken it was last Friday a week ago. No, let me see; last Friday, I believe it was.
Q. 91. Why didn't you tell about that a while ago?
A. Because I didn't think about it, and I wasn't asked about it.
Q. 92. Where was you when you saw that smoke?
A. Over on Cow Pen Mountain.
Q. 93. How many times?
A. This year once or twice, I can't give no dates, and last year and year before last.
Q. 94. And when you want to see smoke you go up on Cow Pen Mountain?
A. If I want to go on that business. If you will go up there and stay long enough, you will see it.
Q. 95. When was it that you first began to notice smoke in this section?
A. From five to seven years ago, I begun to notice the effects of it.
195 Q. 96. Was it 1907?
A. I can't say positively, but somewhere along there, 1907 or 1908.
Q. 97. What was it you first noticed?
A. The first thing I noticed, the timber begun to die.
Q 98. What timber?
A. The hickory died the quickest of anything.
Q. 99. Did you ever examine the hickory to see what killed it?
A. No sir.
Q. 100. Do you know what killed it?

A. I couldn't say positively at that time, but the trees commenced to die in the tops; it would be effected a little every year and eventually killed it.

Q. 101. Haven't you seen hickory die in other parts of the country?

A. I have.

Q. 102. Where did you come from?

A. Georgia, Gilmer County.

Q. 103. You have never examined timber outside of North Georgia?

A. Not to amount to anything. I have been out in North Carolina.

Q. 104. You don't know for a fact that timber is dying elsewhere in the Appalachian Region?

A. No sir.

Q. 105. You have never studied the diseases of timber?

A. No sir.

Q 106. You have never studied the diseases of chestnut timber or hickory?

A. No sir.

Q. 107. Nor Hemlock, nor white pine or any of these different timbers?

A. No sir.

Q. 108. You have just attributed everything you have seen to smoke?

A. No, I said a while ago I didn't, but I attribute the bigger per cent to smoke. I know that some trees are struck by lightning and some of them die of old age, and then there are fires, but I attribute most of the dead timber in Gilmer and Fannin County to the smoke.

Q. 109. Isn't it a fact that nearly all of the timber in Gilmer and Fannin County has been cut over?

A. No sir. A great deal of it has been cut over, and there is a great deal that has never been saw-milled, and never cut at all.

196 Q. 110. What percentage belonging to the Shippens has been cut?

A. Only a small percentage.

Q. 111. What percent?

A. I can't tell you?

Q. 112. Give us a guess?

A. Of what they own, I wouldn't think over 10,000 acres has been cut over.

Q. 113. How much of the land on which they simply own a timber interest has been cut?

A. I couldn't say; there has been a little more of that cut in proportion, than the other.

Q. 114. On how much of it do they simply own the timber interest?

A. I can't say as to that.

Q. 115. Give us a guess?

A. I would say from 65,000 to 70,000 acres; that is the Shippen Bros. Lumber Company.

Q. 116. Have they cut over in all, as much as 20,000 acres?

A. You mean both kinds?

Q. 117. Yes?

A. I suppose something like that; I don't know, but they have cut a right smart, but I wouldn't hardly think they have cut as much as 20,000 acres.

Q. 118. Isn't it true that nearly all of the timber lands in North Georgia have been bought up by a few companies?

A. Yes sir, I think the bigger part of them have been.

Q. 119. Haven't these companies been operating for several years in the North Georgia section?

A. Nobody has been operating in our county but the Shippen Bros. Lumber Company.

Mr. DRAKE: We except to the question and answer as being irrelevant. Exception overruled. Appeal prayed and granted.

Q. 120. Haven't these various companies erected saw-mills and cut a number of sections of Gilmer and Fannin counties?

A. Yes sir.

Q. 121. And the lands in the immediate vicinity of these saw mills have been cut?

A. Yes sir.

Q. 122. When these lands are cut over, it leaves the laps through the woods?

A. Yes sir.

197 Q. 123. And of course the falling tree will injure many of the small trees in that immediate vicinity?

A. Yes sir.

Q. 124. Then these dead laps lying in the woods, when there is a forest fire, they catch on fire?

A. Yes sir.

Q. 125. And that makes forest fires in that section especially deadly?

A. Yes sir, sometimes it makes it more so than it would where there are no laps.

Q. 126. Isn't it a fact that there have been many forest fires in North Georgia?

A. Yes sir, there has been fires.

Q. 127. Don't the woods burn off nearly every year?

A. Certain sections do. Maybe you will have it in one section one year and the next year another. We have good deal of fire in the woods.

Q. 128. These forest fires are especially injurious to the small growth and the underbrush?

A. Yes sir, that is all hurt.

Q. 129. These fires do hurt the underbrush?

A. Yes sir; it kills the small underbrush.

Q. 130. It kills out the moss and the stubble and all of the small stuff that grows right at the ground?

A. Yes sir; it kills that.

Q. 131. It destroys that undergrowth that fills the soil with roots?

A. Yes sir, it destroys a great deal of that; it destroys the undergrowth, and kills out all such as that.

Q. 132. That is the stuff that holds the soil together on these mountains isn't it?

A. Yes sir; that is one of the things that holds it together; these small roots.

Q. 133. Have you ever seen any place where this herbage and undergrowth and vegetation that grows right, along on the soil has been destroyed in these forests have you?

A. I think I have seen it on Barnes Mountain where it was injured a right smart.

Q. 134. How big a spot did you see?

A. Acres and acres.

Q. 135. How many?

A. Five acres, I guess; I never saw so much of the un-
198 derbrush but I saw where it was injured in spots.

Q. 136. Have you ever seen one spot where the underbrush has been killed by the smoke?

A. I don't know whether I have or not. I can't answer that.

Q. 137. You say that some of the trees in the forest began to be effected in the tops?

A. Yes sir.

Q. 138. Some six or seven years ago?

A. Yes sir.

Q. 139. And the first variety was the hickory?

A. Yes sir, that is about the first I noticed; hickory or chestnut.

Q. 140. In regard to your chestnut, you don't know it to be a fact that there is a fung-us disease in the Appalachian mountains that is killing the chestnut?

A. I don't know, myself.

Q. 141. Have you ever made an examination of the roots of the chestnut trees to see what was the matter with the roots?

A. No sir.

Q. 142. You don't really know what killed the tree?

A. No sir, I can't say. I know that the tree would commence to die in the top. At the bottom it would be all right, but at the top it would be dead.

Q. 144. Don't you know that the disease of the root cause- the tree to be effected at the top because it is the furthrest from the root?

A. I don't know; I wouldn't answer that.

Q. 145. Isn't it true that the tree receives the moisture from the soil through the roots?

A. I should think so, yes sir.

Q. 146. Naturaliy wouldn't the top of the tree be the first to be effected?

A. I don't know about that.

Q. 147. So you are really guessing at it when you say that you think that this smoke killed the chestnut trees?

A. I will tell you how I think so. I would pass a place like to-

day, and the smoke would come in there like tomorrow. The trees would be perfectly healthy and green, and then come back in a few days and see these same trees dying, and you would know that the smoke had been in there heavy a few days before, and you would see the tops of the trees dying; the leaves turning brown and all crisped up, you would think that the smoke done it and that's the reason I saw that the smoke killed them.

199 Q. 148. Have you ever seen anything like that exactly?

A. Yes sir.

Q. 149. Where these trees would brown that way, would they never come out again?

A. I have seen them when they didn't come out again.

Q. 150. When did you ever see a tree die from the effects of being browned once by the smoke?

A. I saw one place there.

Q. 151. Where was that?

A. On my place at home.

Q. —. How many of them?

A. I don't know; half a dozen.

Q. 153. What kind?

A. White Pines. That was so far as I could see. They might have been effected badly before that, I don't know; then I have seen the tops dies years before that, and then finally die

Q. 154. You know that white pine is an evergreen?

A. Yes sir.

Q. 155. If it had ever been burned by that smoke you could tell it couldn't you?

A. No sir.

Q. 156. Don't you know that the tops and blades of the leaves turn red?

A. Yes sir.

Q. 157. It would attract your attention as far as you could see the tree wouldn't it?

A. Yes sir.

Q. 158. And you never saw these particular white pines effected but this one time, you don't pretend to say, do you that they could have been effected, and you were not able to tell it?

A. They might or might not. I didn't see those trees more than once a year.

Q. 159. How near were those white pines to you?

A. They were a good piece from my home; half a mile I reckon.

Q. 160. You saw them every month, didn't you?

A. No sir; I have got trees on my place I never have saw.

Q. 161. So it is, you think that you have five or six pines which have been baptised by smoke and at once they died?

A. Yes sir.

Q. 162. And they are the only ones you ever saw?

A. No sir, I have saw them in other places.

Q. 163. You won't swear that they died from smoke disease?

A. Just like I said a while ago, I will swear they died
200 from the smoke disease when I see it in there on them.

Q. 164. Suppose that you knew that it had only scorched them one time; that wouldn't kill a tree would it?

A. If I knew positively that it didn't do it, I would consider that it would.

Q. 165. What time of the year were they scorched?

A. In May.

Q. 166. Were the white pines effected?

A. There wasn't much difference in the white pines and the chestnut oaks, as well as I observed.

Q. 167. Isn't it a fact that the white pines have been dying all over this mountain region for years?

A. Yes sir; some of them have been dying all the time ever since I can remember.

Q. 168. Haven't you seen dead white pines standing along the mountain streams ever since you were a boy?

A. Yes sir.

Q. 169. Do you know what killed them?

A. Some from one thing and some from another.

Q. 170. Regarding the Hemlock, some of that dying?

A. Yes sir.

Q. 171. You don't know from what disease the hemlock dies?

A. No sir.

Q. 172. You do know that it dies from disease?

A. I don't know, but I think so.

Q. 173. You have been seeing dead hemlock since you were a child?

A. Yes sir.

Q. 174. Don't you know it to be a fact that in some sections of the country fifty miles away, that practically all of the hemlock is dead?

A. No sir.

Q. 175. And that the same is true with reference to chestnut in some sections?

A. No sir. I don't know that it is or that it isn't.

Q. 176. In this North Georgia Section here you see stretches of miles and miles that all the forests are perfectly green?

A. Yes sir.

Q. 177. You see that every year?

A. Yes sir.

Q. 178. As a matter of fact, haven't you got to hunt here and there to find patches that have been effected by the smoke?

201 A. I don't know so much about that; you can go most anywhere in this section here and find some effected by the smoke; mighty near any where you go; I mean through this section here close to the furnaces.

Q. 179. Do you say that it is effected by smoke, or are you just guessing at it?

A. I am not guessing at it; but by seeing the smoke in there, and then seeing the damage; I take it to be smoke. I am no botan-

ist and I can't say in regard to that; but I base my opinion in regard to it by seeing the smoke, and then seeing the damage.

Q. 180. Did you ever make a study of this smoke disease?

A. I don't know whether I understand your question.

Q 181. Did you ever really read up on the matter and make a scientific study of it?

A. No sir.

Q. 182. You just pass through the forest and see dead leaves and say smoke?

A. What I know about smoke is having been mixed up with it for a number of years.

Q. 183. When you pass through a forest and see leaves certain colors you say that smoke did it?

A. Yes, in one sense I do. I see leaves that I know have been effected by the smoke, and when I see other leaves exactly the same way, I say that it is smoke.

Q. 184. Don't you know that there are diseases that effect trees in almost exactly the same way?

A. Yes, that may be true.

Q. 185. If you see a leaf that looks similar to that scorched by smoke you say that it is smoke?

A. If it looks like the leaf that has been scorched by smoke, I say it.

Q. 186. Suppose that it looks a little different, would you say it was smoke?

A. I wouldn't say it, if it did look different.

Q. 187. Could you tell it, if it looked exactly like another leaf that had been scorched?

A. I couldn't tell exactly, and if I am not satisfied I wouldn't say it. I wouldn't say that a tree was scorched by smoke unless I was satisfied that it was.

202 Q. 188. Have you examined the various specimens filed here by your expert?

A. No sir.

Q. 189. Have you furnished any specimens to these gentlemen?

A. No sir. I carried some into the office, but I don't suppose that any of them are here.

Q. 190. Tell us how a leaf looks when it has been scorched by smoke?

A. It looks brown and is generally crisped up.

Q. 191. How badly does it brown?

A. Sometimes it crisps up around the edges, and some times it is brown too.

Q. 192. Have you ever taken the leaves for examination right straight through to see what the characteristics were?

A. I have pulled them off and looked at them.

Q. 193. Don't you know that you could go through the forest and see leaves effected by different diseases that would look exactly like it had been scorched by smoke?

A. It might be, I don't know whether I could or not. I can't answer that question.

Q. 194. Do you know where this exhibit No. 37 filed by Dr. Hedgecock came from?

A. No sir.

Q. 195. Look at that and see what kind of a leaf it is (hands leaf to witness).

A. That is black oak or black jack.

Q. 196. What disease did that die of?

A. It looks like smoke sir.

Q. 197. Do you know whether it did or not?

A. It looks to me like it; I wouldn't say.

Q. 198. Don't it look exactly like frost had fallen on it?

A. No sir, not to me.

Q. 199. Don't it look exactly like it had been dried up by frost?

A. No sir.

Q. 200. Don't you know from what mountain that was taken?

A. No sir, I don't know anything about it.

203 Q. 201. Here's another one that has every appearance of smoke burns on it too, doesn't it, even more so than the other one?

A. Yes sir, that has the appearance of smoke on it.

Q. 202. Would you say that was burned by smoke?

A. Yes sir, I would. From the best of my knowledge it is.

Q. 203. You think that has been yellowed by smoke?

A. Yes sir.

Q. 204. This is FP 15029, Exhibit "C" to Dr. Hedgecock's testimony. I now hand you FP-15017, Exhibit "A" to Dr. Hedgecock's testimony, state whether or not that was burned by smoke?

A. It looks like it to me, sir.

Q. 205. Has every appearance of it?

A. It looks to me like it *it* does.

Q. 206. So, if the professor thinks that is not burned by smoke, he don't know what he is talking about?

A. No sir, I don't say that. I said that it looks to me like smoke.

Q. 207. So that is the way you judge the trees; you look at them like you did at this, see the leaves brown and say, well that is smoke?

A. Yes sir.

Q. 208. You don't say that this is the onlv disease in these mountains?

A. No sir.

Q. 209. I believe you have given one place, or stretch eight miles in length and three or four miles wide that you said had been scorched by smoke?

A. Yes sir.

Q. 210. When did you see that?

A. Last week.

Q. 211. That the biggest place you saw?

A. Yes sir.

Q. 212. You have seen stretches of miles and miles where you couldn't detect it at all?

A. No sir; as I stated -while ago you can see some sign of it most anywhere in this section.

Q. 213. What signs do you see?

A. You see the leaves crisped up and burned.
Q. 214. How many on a tree?
A. I couldn't tell you about that.
Q. 215. No one would notice it would they, unless they had their eye on the lookout for trees effected by smoke?
204 A. Some wouldn't see it in passing, in some places.
Q. 216. Have you noticed around Blue Ridge?
A. No sir.
Q. 217. You have been around here for how long?
A. I have been here two days. I came here night before last and left yesterday at twelve o'clock and came back today.
Q. 217. This is about half as far from these furnaces as to where you live?
A. Yes sir.
Q. 218. And almost in a direct line?
A. Yes sir.
Q. 219. And Blue Ridge is one of the lowest gaps in these mountains isn't it?
A. Yes sir, and three or four years ago this was all burnt up too.
Q. 220. This year, there isn't a scorch is there?
A. I haven't noticed any; I haven't paid any attention.
Q. 221. You can look right around there and see a good corn patch can't you?
A. I don't know I haven't looked at that.
Q. 222. You haven't got an eye in Blue Ridge for burned leaves?
A. I haven't looked for anything here; I didn't come down here to look for smoke here.
Q. 223. How many dead trees to the acre through this North Georgia country?
A. I couldn't tell you.
Q. 224. Two or three?
A. In some places there is as high as thirty or forty.
Q. 225. And in some places none?
A. Yes sir, I can pick out acres that haven't a single dead tree, and then I can show you places where there is 50% to 60% dead.
Q. 226. As a matter of fact, Mr. Sharp, this smoke comes into this North Georgia country just a few days in the year; is that true?
A. It comes in here; I don't know what time of the year, but we can find it along through the summer.
Q. 227. You don't mean every day, do you?
A. No sir, but you can see it off and on. It comes sometimes for three or four days maybe.
Q. 228. Don't you know that it comes in on an average of once a month?
A. Yes sir, I should say that is a good average
205 Q. 229. Once every two weeks?
A. Yes sir, and more than that. Of course there are days and days there won't be any smoke, and then again we have it for three or four days.
Q. 230. When did that begin?

A. I can't tell you. It was in there back in May and it has been that way every year, ever since six or seven years ago.

Q. 231. You didn't see any of the effects of it in May?

A. Yes sir, I did; I saw it on my potatoes there at home.

Q. 232. Still the potatoes grew on?

A. No sir; they never growed off. I never made half what I ought.

Q. 233. Maybe you didn't work them?

A. I didn't but my folks did.

Q. 234. Isn't this a fact, that when the forests have been cut over, and you leave the dead laps of the trees in there, that disease arises in these laps and that is imparted, or rather the trees of the forest are infected by them?

A. I don't know that I can answer that. I can't answer that part about the disease. I know that sometimes when you cut pines worms get into them and then they get into the other pines; if that ain't what you mean by disease, I can't state.

Q. 235. Isn't the same thing true with reference to chestnut?

A. No sir, I don't think that it is.

Q. 236. That is only true as to the yellow pine?

A. Yes sir. The white pine, the worms don't effect that.

Q. 237. Don't you know that that is true with reference to all kinds of timber?

A. It has never shown up that way in our section except on the yellow pine.

Q. 238. You testified about the smoke hurting your apples, and as I understood you, you said they turned black?

A. Yes sir, they turn dark.

Q. 239. Do the- always turn dark?

A. Not always. Sometimes they speck and don't turn dark; it was only once or twice that I saw one or two of the orchards turn perfectly dark; the way it generally effects it, it generally specks it a dark brownish color, and they would hang that way on the
206 tree until after the time for them to mature.

Q. 240. Did they crack open?

—. Yes sir, some of them did.

Q. 241. Don't you know, as a matter of fact that when the apples crack open that way, that that is the fung-us disease?

A. No sir, I don't.

Q. 242. Don't you know that smoke don't have any such effect?

A. I know sir that I would see these trees and I would see the smoke in there and then be back there a week after that and these apples would be that way, and would drop off.

Q. 243. Then you think that smoke has that effect?

A. It did on those trees I saw in there. I counted a dozen in the Crenshaw Orchard.

Q. 244. Did you ever see it anywhere else?

A. I never saw it as bad as that anywhere else.

Q. 245. Did you ever see apples turn black?

A. No sir, I have seen them turn a dark brown.

Q. 246. You base your opinion solely on the fact that you had some apples and you saw some smoke in there, and afterwards you

saw the apples turn black, and you reached the conclusion that it was the smoke on the apples that caused them to turn black?

A. Yes sir.

Q. 247. You don't know it to be a fact that they turn black invariably from the fung-us disease?

A. I can't say about that.

Q. 248. You don't know whether that is smoke or they really have got the fung-us disease?

A. No sir.

Q. 249. You say that you smelled smoke from the Ducktown plant when out on some mountains?

A. I said that I smelled the smoke.

Q. 250. When was the last time that you smelled any smoke down in Gilmer County?

A. I declare I can't answer that; I don't remember the date when I smelled it.

Q. 251. When did you quit raising peas Mr. Sharp?

A. I haven't raised any peas to amount to anything in several years; I haven't quit trying yet.

Q. 252. Got any this year?

A. Yes sir.

207 Q. 253. When did you plant them?

A. Along back in May.

Q. 254. How are they getting along?

A. Very well. They are looking very well.

Q. 255. Haven't you seen in your travels stretches of country where they raise the finest kind of peas?

A. They used to raise them.

Q. 256. Don't you know that last year you saw some very fine crops of peas?

A. No sir.

Q. 257. Do you know where Mr. Willis Gillam lives, three miles this side of Ducktown?

A. No sir, I don't know that I do.

Q. 258. Don't you know that three miles this side of Copper Hill Mr. Gillam has a splendid crop of peas?

A. No sir; I haven't passed, and I don't know anything about it.

Q. 259. Have you been between Blue Ridge and Copper Hill this summer?

A. Yes sir—I am not sure, let me see. I have been on that road from Epworth to Copper Hill.

Q. 260. Do you remember seeing any crops effected between Blue Ridge and Copper Hill?

A. I don't rem*meb*-r seeing or passing many crops.

Q. 261. You kept an eye out for crops all the time?

A. I never paid any attention to the crops as I went through there. I don't think I passed very many farms on this road between here and Copper Hill, I mean between here and Epworth.

Redirect examination by Mr. DRAKE:

Q. 1. You have been asked about getting up evidence for the State in this case, I will ask you if you don't know it to be a fact that

I have met with at least three public meetings of the farmers of Gilmer County at Ellijay in the last two months discussing this situation with them?

A. Yes sir.

Q. 2. I will also ask you, if you don't know it to be a fact that Mr. Lamar Hill and I have been associated with the citizens of *of* Gilmer and Fannin Counties for the last six or seven years in re-
208 gard to this smoke situation?

A. Yes sir; I have understood that, and I have saw you there working at that.

Q. 3. Has the State paid you for your work that you have done in getting up this testimony?

A. No sir, and I don't know whether I will ever get anything for it.

Mileage of witness: 50 Miles.

J. P. VESTAL, sworn for the State to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. —. How old are you Mr. Vestal?

A. Fifty-nine; sixty if I live to see the first of next February.

Q. 2. Where do you live?

A. At Epworth at this time. I was born something less than a mile from the Tennessee Copper Company's plant.

Q. 3. Were you born in Fannin County?

A. Yes sir.

Q. *3.* What county do you now live in?

A. Fannin.

Q. 4. How much land *to* you own in Fannin County, and whereabouts is it located.

A. We owns, me and my boy, about 15,000 acres in Fannin and Gilmer and a small per cent in Murray.

Q. 5. Your property, which way is it located from these plants?

A. South and a little bit West.

Q. 6. How near to the copper companies is the nearest part of your land?

A. About 2½ mles from the Tennessee Copper Company.

Q. 7. How far to the Ducktown plant?

A. Air course, I think that it is something like two miles further.

Q. 8. How far from where you now live at the present time to these plants?

A. That is where I now live.

Q. 9. The distances you have just given?

A. Yes sir.

Q. 10. Are you or not familiar with the timber that grows in that part of Fannin County?
209 A. Yes sir; I claim to be and I think that I am.

Q. 11. Are you acquainted with the crops that the farmers grow in that country?

A. Yes sir; I am not a farmer much myself at this time; although I am what you might term a one-horse farmer.

Q. 12. What has been your business; name it?

A. For the last twenty years and better I have been in the lumber business. For the last two years I haven't done anything, but for twenty years back of that I have been in the saw-mill business.

Q. 13. Are you or not familiar with the history of that Ducktown copper smelting industry?

A. I don't know so much about the smelting; but I am acquainted with the smoke that comes from there, and the fumes.

Q. 14. How long, do you know, have they been running?

A. The Ducktown plant has been running for twenty-two years or more.

Q. 15. You know when they commenced, do you?

A. Yes sir.

Q. 16. Do you remember when they went to making copper there at this other company's plant?

A. Yes sir.

Q. 17. Have you observed smoke or sulphur fumes arising from those plants?

A. Yes sir.

Q. 18. Please describe that smoke that arises and its conduct after it gets into the air?

A. Sometimes it rises up some distance, and then sometimes it don't go so high, and then it makes off whichever way the air is; it goes towards North Carolina sometimes, and sometimes towards Georgia, just whichever way the air carries it.

Q. 19. What is the appearance of that smoke?

A. Sometimes it will have a different appearance; sometimes it will be a light grey; and then sometimes it is blue, and then sometimes it has a yellow cast.

Q. 20. Does the atmosphere have anything to do with that?

A. The atmosphere? I don't understand.

Q. 21. I mean on the different colors?

A. I don't know about that. I know that it don't appear alike at all times. Sometimes it is very blue.

210 Q. 22. Do you know whether to attribute that to the weather or not?

A. I think that when the sun is shining bright it shows up lighter.

Q. 23. Then the condition of the atmosphere and the sun shine does effect the color of it?

A. Yes sir.

Q. 24. Have you ever seen that smoke over here in Georgia?

A. Yes sir.

Q. 25. When?

A. At different times.

Q. 26. Commence and tell in the last five or six years, the condition the smoke has been here in Georgia?

A. From 1905 to 1910 it was very bad and then for about two years it let up a little; then in 1913 it was bad that year; and this year it has been worse than it was last year.

Q. 27. Any way besides seeing that smoke that you could tell it?
A. Yes sir, you could smell it.
Q. 28. How does it smell?
A. It smells like sulphur smoke.
Q. 29. Have you ever been over to the plants?
A. Yes sir, I have been over near the plants.
Q. 30. Have you smelt the sulphur fumes there?
A. Yes sir.
Q. 31. As compared with those fumes, how was that smoke?
A. The same thing, so far as I can tell.
Q. *31.* The same character of smell?
A. Yes sir.
Q. 32. What is the effect of that smoke on the forest trees and foliage?
A. Well, when it comes over there, as soon as it leaves the leaves will wither like the fire has scalded it and in a few days they begin to turn brown and later they drop off. After a heavy attack of it the leaves will shed. That come in on the timber this year.
Q. 33. How long ago this summer have you observed the leaves falling off?
A. Last week, and three weeks ago. The leaves of the timber this summer are on the ground.
Q. 34. Have the leaves been on the trees green this year?
A. Yes sir.
Q. 35. Have you made any trips up through the Northern part of Fannin County this year to observe the smoke injury; if so, how did you make those trips?
211 A. I think I made three quite recently, within the last three weeks.
Q. —. The first trip, who was that with?
A. Col. Drake, yourself, was with me the first trip, and Mr. Spooner was with me the first trip.
Q. 37. Who else?
A. My son, John Vestal.
Q. 38. On that trip, where did we go?
A. We went out to Epworth to Madola, Georgia; we went out near Higdon's store, and then we turned a little Southwest and went out near Oasis Post Office on the old turn pike that time.
Q. 39. In regard to water courses, what water courses did we cross or traverse at that time?
A. We crossed what is called Patterson branch next to Fightin' Town, and then coming back we crossed some other branches and come back across by Adams.
Q. 40. When we struck that *trun* pike, what is that creek called?
A. That — Higdon Creek, over East.
Q. 41. How many miles did we go from Epworth to where we turned back?
A. I don't remember what the distance is/
Q. 42. About how far?
A. It must have been seven or eight miles.
Q. 43. How far were we from the copper companies' plants when

we started—how far from them were we at the furtherest point on that trip, and how far from them when we turned back?

A. When we started out we was I think about 2½ miles from the Tennessee Copper Company's plant, and about 4½ miles from the Ducktown plant, and when we turned back, we must have been, I would say, eight miles.

Q. 44. From where?

A. From the Tennessee Copper Company's plant, and further from the Ducktown plant.

Q. 45. Was that the furtherest point we were, there where we turned back?

A. I don't remember whether we were further away there at Higdon's store; yes, I think that was.

Q. 46. On that trip did you see any recent signs of sulphur injury on that timber?

212 A. Yes sir; lots of it.

Q. 47. To what extent was the timber that you saw effected?

A. I think that we saw places where there must have been one-fourth effected, and by smoke this year.

Q. 48. Was there evidence of previous damage?

A. Yes sir, there was.

Q. 49. In what years and times did that appear to have been damaged?

A. It has run all the way back for one, two or three years, and on back maybe as long as five years. It won't stand long after is it killed by this smoke; it soon drops. The timber won't stand long.

Q. 50. What kind of timber, generally, appeared to be effected the worst, that we saw, Mr. Vestal?

A. I think that we saw more oak timber than any other kind; what we call Spanish Oak, Black Jack and Post Oak, and some White Oak, and we saw some hickory, small hickory. Most of the hickory has been killed heretofore, though.

Q. 51. I will ask you whether or not we made search for hickory and how often we come on it that day in that country?

A. Yes sir, we looked for hickory and it was very scarce.

Q. 52. How did the hickory use to be in that country?

A. There used to be much more than now; a large per cent more than now.

Q. 53. With repsect to dead trees that had died in previous years, how was that in that forest?

A. There was a lot of dead timber.

Q. 54. What did it appear to have died from?

A. I think that the biggest per cent died from smoke. May have some died from other causes.

Q. 55. How does the smoke effect that timber in killing it?

A. It first comes over and bites the leaves; crisps them and turns them brown, and then the tops begin to die, and it grows worse; it will first kill the top; maybe some sprouts and some of the bottom leaves, and graudually it goes on down until finally it kills the tree.

Q. 56. Until how many years back does it take to kill the tree?

A. That depends on how great the smoke is; if it becomes
213 great it may kill it in one year, and then again it would live probably four or five years; it depends on how strong the smoke is.

Q. 57. Does the time of the year that it strikes it have anything to do with the injury?

A. I think that it does: when the sap is in the tree the worms will get into it, and it will go faster.

Q. 58. Suppose that it strikes it in the fall, would it have the same effect as if it struck it in June?

A. I think not. When the sap is heavy I think the effect is worse.

Q. 59. How much land, forest land, in acres, do you suppose onn that trip, we passed through?

A. I didn't make any note of it: I don't know.

Q. 60. Estimate it please, in hundreds of acres?

A. It would be a rough estimate shure enough; we went that distance, and we would cross two lots in a mile.

Q. 61. Also estimate it in miles, how much territory did we inspect?

A. We must have went while I was with you,—we went out eight miles and back.

Q. 62. How far on either side of the roads could we see when we didn't stop, out into the woods?

A. We could probably see a mile or more. In some places you couldn't see no distance; and then again you could see five miles. You can't make a close inspection that far, of course.

Q. 63. Could you see smoke injury and easily detect it through that section of the country?

A. Very easy. A man can't help but see it if he will keep his eyes open.

Q. 64. The next trip that you made since then, who was with you?

A. It was made a few days later with Mr. Frank Shippen; my son John, J. H. Vestal, and I can't call the other man's name at this time.

Q. 65. Where does he live?

A. He lives in Atlanta—Mr. Adams.

Q. 66. Is he a photographer?

A. Yes sir.

Q. 67. Where did you start from with Mr. Adams, Mr. Frank Shippen and your son?

A. There was another man with us; Mr. Frank Shippen, John, myself, Mr. Adams,—I will give you the other man's name in a minute—Mr. Sharpe.

214 Q. 68. Where did you go with them, where did you start?

A. We left Blue Ridge together.

Q. 69. Where did you go with them?

A. We went to Epworth.

Q. 70. Where did you go from there?

A. We went out by Madola Post Office, out near Higdon's store, we went further out that way than we and you went in that direc-

tion, and turned back and went to Oasis, and we went further that way to where Mr. Barnes lived, and went on up on Blue Ridge mountain, called the Barnes mountain.

Q. 71. How much time did you spend up on the mountain?

A. We stayed up on the mountain some little bit.

Q. 72. What was the character of the smoke injury that you saw up on the mountain?

A. The smoke injury was very great.

Q. 73. What per cent of it was burned by smoke?

A. I don't know what per cent, but there was a big per cent; I suppose that one-fourth of the timber that had green leaves in the spring, was brown.

Q. 74. Where did you go after you got off of the mountain?

A. We come back to Mr. Barnes and stayed all night, and next day we went across the Blue Ridge over on Jack's river to Mr. Harkinses.

Q. 75. What point did you go to from there?

A. We went down the river to Bear Branch, and then we come on back across the mountain to Mr. Barnes again, and then we—I have made so many trips I may get them tangled up on them.

Q. 76. As best you remember?

A. I'll get it right; I will take my time. We then went back down to Madola, down to Pearceville, and then we went Northwest to Frog Mountain, and then on Granny Marr mountain. We went up on the mountain where we could see both of these plants. It was burned off over them mountains.

Q. 77. What was that burn caused by?

A. Smoke.

Q. 78. Could you see the Tennessee Copper Company stack from there?

A. Yes, sir.

Q. 79. See the Ducktown Copper Company smoke from there?

A. Yes, sir.

215 Q. 80. You observed it and looked at it?

A. Yes, sir.

Q. 81. Which way was the swind blowing that day, if you remember?

A. I believe it was going kinder Northwest, or kinder west direction; I have been up there so many times, I don't remember. I know the next time I was up there later on I could see the stack; the Ducktown stack.

Q. 82. The first day, could you see the stack?

A. No, sir, the smoke was too thick; I don't think I saw the stack the first day. I could see the water tank that trip.

Q. 83. Did you wind up the trip with Mr. Sharp that day?

A. No, sir, we went on back by Pelf's place, is my recollection, down as far as Burnt Store and Church House.

Q. 84. Where did you go from there?

A. We went on back around by Epworth and Copperhill.

Q. 85. Have you made any trips since then?

A. Yes, sir.

Q. 86. Who was with you?

A. I made the next trip with Mr. Clark, Mr. Johnson, myself, John J. Vestal again, and Dr. Hedgecock, I believe is his name.

Q. 87. Then you took the same route that Dr. Hedgecock took on that trip?

A. Yes, sir, I was with them that day until late in the evening when they came on to Blue Ridge, I went on home.

Q. 88. They had to go by your home?

A. No, sir, we went by Copperhill.

Q. 89. On all of these trips, these three trips you have described, state as nearly as you can how much territory you covered, in miles as nearly as you can?

A. We was out several miles; that is to say where we run out to, and where we left the road and went up on the mountains.

Q. 90. You will please estimate the number of miles that you walked and rode?

A. It would be hard to do that on these different trips. On that second trip we went to Tumblin' Creek and down Tumblin' Creek, on down to Number nine; that is we went to the Tennessee line, and then turned back through 27, 11 and 12, I think; that is on the second trip.

216 Q. 91. Did you notice any smoke injury over on Tumblin' Creek?

A. Yes, sir, there was smoke injury over there.

Q. 92. Where was the worst effected section of the country that you went through?

A. I think it was worse back on these other mountains than it was on Tumblin' Creek; it was bad down Tumblin' Creek.

Q. 93. You say other mountains, what mountains do you mean?

A. Known as the Blue Ridge mountain, Barnes Mountain and Granny Marr mountain; all that section down by Epworth.

Q. 94. Cow Pen Mountain, do you know where that is?

A. Yes, sir.

Q. 95. Was you up there?

A. No, sir.

Q. 96. Which way from there?

A. At Harkinses, we was East.

Q. 97. Do you know what is called on the map here Three Fork Mountains?

A. I reckon what is called the Three Forks is South of Cowpen; I think that is what is called the Three Frogs.

Q. 98. Now here, look at this map?

A. I can't tell but very little about the map.

Q. 99. Suppose that you were standing up next to the Tennessee line, like from say this point (indicating), here on Cowpen mountain, the three Frogs are down here this way?

A. I am not acquainted in there.

Q. 100. But it would be South of it?

A. I think it would be South from Cowpen.

Q. 101. Take Higdon's store, I will show you right here (indicating), now was that point furtherest from Higdon's store?

A. Yes, sir.
Q. 102. How far west?
A. I don't know the distance.
Q. 103. Didn't you have to stop the automobile at Mr. Barnes?
A. Yes, sir.
Q. 104. And from there you walked up on that mountain?
A. Yes, sir.
Q. 105. Is that what is called the Blue Ridge mountain, the Three Forks of the Blue Ridge Mountains?
A. No, sir, the Three Forks is west of there.
Q. 104. How far from Higdon's store and southwest did you go; estimate it in miles?
A. On either one of the trips?
Q. 105. Yes?
A. Harkins lives on 20, 21 and 22 in the 9th and second—
217 Q. 106. They are not on this map?
A. I don't know the distance.
Q. 107. You went over on Jacks River?
A. We did on one trip.
Q. 108. You can't estimate in miles how much territory you covered?
A. It would be kind of guess work.
Q. 109. Please give us a guess as to how far you went?
A. From Higdon's store?
Q. 110. Yes?
A. Four or five miles air course; it was a good deal more than that by road.
Q. 111. I mean by road, how far did you go?
A. Several miles; let me see,——
Q. 112. I want to know how much territory you went over?
A. I guess we went nine or ten miles the way we went.
Q. 113. Did you observe any smoke damage, where you crossed over the mountains?
A. Where we crossed the Blue Ridge, we did.
Q. 114. What Gap was it that you went through on the Blue Ridge?
A. Barnes' Gap.
Q. 115. Do you know where the Sowers gap is?
A. Yes, sir.
Q. 116. How near did you go to that?
A. Three or four miles.
Q. 117. Which way?
A. West and Northwest.
Q. 117. You went through the mountains three miles Northwest of Sowers gap?
A. Yes, sir, Near Harkinses; they live in that direction.
Q. 118. Grassy Mountain, was that made on that trip?
A. No, sir.
Q. 119. Big Bald or Little Bald?
A. No, sir.
Q. 120. Which way did you pass over these mountains?

A. Well I was rather East and North of what is called Grassy Mountain and Bald; almost East due East at Harkinses.

Q. 121. Jacks River East of these mountains or West?

A. Jacks River, the head of the Stream is rather East. I am not sure, as I am not so well acquainted with Grassy Mountain in there.

Q. 122. All of your work was then South and East of these mountains in this section, back in this section?

A. Yes, sir, you might say East and North East these last three trips I spoke of.

Q. 123. Have you observed any smoke injury in Fannin County this year, before these trips?

A. Yes, sir.

218 Q. 124. When?

A. All along all through all the years, ever since vegetation put out. Ever since May all along up until about the first of June, about the 8th and 9th of June; it was very bad through May, and a little since then.

Q. 125. Did you see any evidences of it on the timber in May?

A. Yes, sir; some little discoloration through May.

Q. 126. Did you observe any of it on any garden truck in May?

A. I can't say that I did in May. The 8th and 9th of June it was very bad.

Q. 127. Since that time has it or not been very bad?

A. Yes, sir, along at different times.

Q. 128. How many times, do you know?

A. Well, it bit some of our stuff here on the 3rd of July.

Q. 129. This year?

A. Yes, sir; I had some new potatoes, and on the 3rd of July it bid them.

Q. 130. What other days did it effect your stuff,—did you see and smell it on the 3rd of July?

A. Yes, sir, I saw it and smelled it.

Q. 131. Any other days you see it in July?

A. I have seen it all along.

Q. 132. In August, have you seen it this month?

A. Yes, sir; every few days it comes over there.

Q. 133. The trip that you spoke of making with myself and Mr. Spooner, please describe the condition as to smoke as we went along to Higdon's store, and also as we came back, what did we see?

A. I have been — so many trips, I don't know what I could tell you. I saw smoke damage on every trip, and besides you can see it coming from the plants all through the country. I saw it from both plants every trip I made.

Q. 134. The trip that I was on, Mr. Vestal, do you remember whether we saw any smoke as we went along?

A. Yes, sir, I think we did.

Q. 135. I mean right down in the timber, did we smell any?

A. As I say, I have seen it so often, I don't remember what we saw. You remember me and you saw both plants. No, that is a

different time; it was the other trips I was on that we saw the
219 plants; I am mistaken about seeing the plants.

Q. 136. You don't recall seeing the smoke boiling through the timber in any of these hollows as we come back on that trip?

A. I don't quite at this time remember that.

Q. 137. You don't recall it, if such was a fact?

A. No, sir.

Q. 138. Last year, was there any damage done in that country?

A. Plenty of it.

Q. 139. What was the day or the months, if you can locate them?

A. I didn't try to keep any dates. I did keep some dates. I know that the Tennessee Copper Company was said to be shut down when I came back from Chattanooga, and there was damage the very next day. I come back on the 11th, and there was damage the very next day.

General FOWLER: Counsel for defendant objects to the statement by witness that the Tennessee Copper Company was "said to be shut down," because witness doesn't state that he knew it was shut down. Objection overruled. Appeal prayed and granted.

A. I was there and saw no smoke coming out of their stacks, and I was also there on the evening of the 12th and I didn't see any smoke coming out of their stacks again.

Q. 140. How close were you to Copper Hill and the Tennessee Copper Company's stack?

A. I was in half a mile, over across the bridge there that went into town.

Q. 141. And there wasn't no smoke coming out of the Tennessee Copper Company's stack at that time?

A. No, sir, I noticed it because they were said to be shut down.

Q. 142. On the 11th and 12th did you see smoke out at Epworth?

A. I did on the 12th. It bit my garden peas and corn.

Q. 143. Could you smell it?

A. Yes, sir.

Q. 144. That was last year?

A. Yes, sir.

Q. 145. What month — that in?

A. May.

220 Q. 146. The 12th day of May, 1913.

A. Yes, sir, and right on for a few days after that it continued right on.

Q. 147. The smoke was in there?

A. Yes, sir.

Q. 148. Was there any other times last year in July and June that it was over in that section?

A. Yes, sir, all along up until the latter part of the season. I don't remember the dates. I didn't put down none of them dates, but parties did that was with me.

Q. 149. You have been having a law suit with the Ducktown Copper Company, in Tennessee?

A. Yes, sir.

Q. 150. In what court?

A. All the suit I ever had was tried in the Federal Court at Chattanooga.

Q. 151. Was that the occasion on which you had been to Chattanooga?

A. Yes, sir. I came back home on the 11th day of May, 1913.

Q. 152. What other dates, later on, did you see the smoke over there?

A. I don't think I kept any dates, but I don't think that any month passed that we didn't have smoke and plenty of it but what damaged the young green leaves on the trees.

Q. 153. Mr. Vestal, how were the forests there on these mountains facing towards Ducktown, within the radius you have just described as having passed through, beginning at the Tennessee line and extending back say from five to ten miles in Georgia, what is the condition of the forests?

A. There is lots of damage. I think that 50% of it is bad in different places; I wouldn't say that all of it is bad, but acres and acres of it there is 50% bad.

Q. 154. As to the injury there, is it slight or is it serious near that section?

A. It's bad.

Q. 155. When you stated that there was a let up in this smoke in certain years, what years would you say that was?

A. From 1910, there seemed to be a let up until 1913; it was not so bad those years.

Q. 156. In 1910, 1911 and 1912 it wasn t so bad in this section?

A. No, sir.

Q. 157. As to the other years beginning back, when did you say it was bad?

221 A. In 1913 it got considerably worse, and this year it is a good deal worse than it was last year.

Q. 158. Prior to 1910, was it bad in that section and if so, what year or years?

A. From 1905 to 1910 there was very great damage to us and then it let up then until 1913; it wasn't so bad; we had smoke damage all along but it wasn't so serious as back of that and since that.

Q. 159. Do you know the effect of smoke on growing vegetation?

A. Yes, sir, I claim to know.

Q. 159. Describe that, please?

A. You mean on the forests? As I stated while ago it turns them brown when it hits it; they crisp up and turn brown and then they fall of-, I mean the leaves.

Q. 160. I believe you described that before?

A. Yes, sir.

Q. 161. Does it have a similar effect on garden truck?

A. Yes, sir, it looks like frost bite. The tomato and potato vines look like they was frost bit, or had fire around them.

Q. 162. What farm products are more resistant than the others if there is any such; I mean by that what does it effect the least?

A. I think that it effects corn the least of anything; sorghum cane too; I think they can stand it better than anything else.

Q. 163. What does it affect the worse; if you know?

A. It is very heavy on Irish potatoes; tomatoes, beans, peas and oats, and then it does serious damage to the orchards, but I don't know so much about the orchards as I do the other things.

Q. 164. Have you observed its effect on wheat and oats for the last few years?

A. I haven't see'd any oats; we can't raise oats.

Q. 165. Since when haven't you been able to raise any oats?

A. I discovered injury to oats eighteen years ago; it has been hurting the oats ever since that time, as far back as eighteen years ago.

Q. 166. State whether or not there was any difference after they built the tall stacks?

A. There was damage before the- built the tall stacks, all over in the Tumblin' Creek Country.

222 Q. 167. Do you know what effect the building of these high stacks had?

A. I don't know so much about the high stacks; I know when they quit roasting ore on the ground in what the- called road fires and went to smelting the green ore, it was very much worse all along.

Q. 168. After they changed the process it got worse?

A. Yes, sir. I didn't hurt so much when they used the roast process.

Q. 169. But as I understand you it did some damage?

A. Yes, sir, as far back as eighteen years ago it hurt us some, that is, in Georgia.

Cross-examination.

By GENERAL FOWLER:

Q. 1. You had a law suit against the Ducktown Company?

A. Yes, sir.

Q. 2. Do you remember in what year you brought suit?

A. I think I brought suit in 1908; no, not that suit; I brought that suit in 1910, the suit that was tried.

Q. 3. You brought suit before that?

A. Yes, sir.

Q. 4. In what court was that suit brought?

A. The first suit was brought in the county courts, I reckon, and was supposed to be tried at Ducktown.

Q. 5. The law court at Ducktown?

A. Yes, sir.

Q. 6. That suit was brought in 1908?

A. Yes, sir.

Q. 7. Then you brought another for trial in the Federal Court at Chattanooga?

A. They carried it to the Federal Court, and it was tried at Chattanooga.

Q. 8. When was that tried?
A. We had a trial, or a mistrial of it in May.
Q. 9. What year, 1913?
A. Yes, sir.
Q. 10. What became of it?
A. Eventually I lost it. It was tried again and they beat me.

Mr. DRAKE: We except to the questions and answers regarding this suit as being irrevelant in this litigation.
Exception overruled. Appeal prayed and granted.

Q. 11. That was tried before a jury?
A. Yes, sir.
Q. 12. That was submitted to a jury?
A. Yes, sir.
223 Q. 13. They returned a verdict against you?
A. Yes, sir.

Mr. DRAKE: And on the further ground that if relevant at all, the record of the court would be the best evidence. Exception overruled. Appeal prayed and granted.

Q. 14. You have stated here that you made several trips, on one of them you took along Dr. Hedgecock, the Government Expert?
A. Yes, sir.
Q. 15. He was an expert to examine that territory?
A. Yes, sir, I suppose he was in there for that.
Q. 16. You piloted that crowd?
A. I was there, yes sir.
Q. 17. Didn't you go by a number of gardens and fields where good crops were growing?
A. I went by some gardens, but we didn't pay any attention to the gardens.
Q. 18. Why didn't you?
A. I am not interested in the gardens. I am interested in the timber question. We looked at some garden stuff at home, is all.
Q. 19. Don't you know that these fumes will injure the garden stuff quicker than anything else?
A. I think that it will injure the timber about as quick as anything.
Q. 20. Don't you know that tomato plants and potatoes suffer more quickly than any kind of timber?
A. I don't know that it will get the plant first. I think that it will show up on the timber as quick as on anything.
Q. 21. Any way you didn't stop to look at a single garden or a single field of corn as you went along?
A. Let me see whether we did or didn't. There at Epworth we did look at a little of my stuff. I have made so many trips, it's hard for me to remember. I believe we did look at some flowers there at Mr. Barnes.
Q. 22. What kind?
A. Just ordinary flowers, and they showed up with smoke I think.

Q. 23. You don't know, you are just guessing, ain't you?

A. No, sir, I have been acquainted with it all these years, and I think that I know smoke damage.

Q. 24. You think that you can't be mistaken?

A. I wouldn't say that I couldn't be.

224 Q. 25. Didn't you gather quite a lot of specimens?

A. Yes, sir, we got a good many.

Q. 26. And showed them to Dr. Hedgecock?

A. Yes, sir.

Q. 27. Now, Mr. Vestal, don't you know it to be a fact that there are fine fields of corn growing right around near the Ducktown plant?

A. There are some fields of corn growing there.

Q. 28. That corn in good condition?

A. Well, sir, it has been damaged.

Q. 29. Did you investigate it?

A. Yes, sir.

Q. 30. Where?

A. Right there at my home place.

Q. 31. Don't you know that there is a fine field of corn right across the river from the Ducktown property?

A. I saw a field of corn there, yes, sir.

Q. 32. Didn't that look like splendid corn?

A. It looks like it is in very good growing condition; I haven't been close enough to see any damage on it.

Q. 33. Your corn was over at Epworth?

A. Yes, sir, and Mr. Angel said that it was damaged by smoke.

Q. 34. Don't you know that it is improper to give hearsay testimony?

A. I don't know; that's what he said.

Q. Don't you know that it was illegal for you to inject that in here?

A. No, sir.

Mr. DRAKE: We except to the question and answer because I believe it is competent; the party in question being the agent and representative of the Tennessee Company.

Q. 34. I didn't ask you to tell anything Mr. Angel said?

A. No, sir.

Q. 35. Now, Mr. Vestal, don't you know that there are gardens right around Ducktown, and within a few hundred yards of the Ducktown plant that are in good condition?

A. I know that those I saw around Copperhill are damaged; I have two daughters living there.

Q. 36. They are South of Copperhill?

A. Yes, sir.

225 Q. 37. And three or four miles from Ducktown?

A. Half a mile, one of them.

Q. 38. I am talking about Isabella?

A. Probably near three miles from the Isabella plant.

Q. 39. And within half a mile of the Copperhill plant?

A. Yes, sir, one of them; the other one is possibly a mile.

Q. 40. On your trips here you speak of you- have- been out West of Epworth?

A. I have been to the Blue Ridge; I haven't been up further than the Blue Ridge in some time.

Q. 42. Have you been East of the Blue Ridge?

A. I don't know that I have been East of the Blue Ridge up in *in* ten years.

Q. 43. All of your investigations have been out in the direction of Madola, Pierceville, Higdon's store and around in there?

A. I have been from here to Atlanta on the South and to Knoxville on the North.

Q. 44. Did you find any smoke damage in Atlanta?

A. No, sir.

Q. 45. Was you down there hunting smoke damage?

A. No, sir.

Q. 46. You went over that ground with Dr. Hedgecock?

A. I was with him, yes sir.

Q. 47. Going back to Isabella, didn't you see some fine gardens right there in Isabella?

A. I saw some gardens in there, and I saw some damage too.

Q. 48. Tell one single garden where you saw any damage?

A. Some there at Mrs. Weeks'.

Q. 49. What was it that was damaged?

A. As far as I can call to mind it was collards and other things.

Q. 50. Do you know that was smoke damage?

A. I am satisfied that it was.

Q. 51. You are not a botanist?

A. No, sir.

Q. 52. You say your orchards were damaged?

A. Yes sir; they was damaged all right.

Q. 53. How were they damaged?

A. Dead limbs, discolored leaves.

Q. 54. Do you know anything about the San *Hosae* scale?

A. No, sir.

226 Q. 55. You can just see smoke damage on any kind of a plant or tree?

A. I can't see it unless it is there.

Q. 56. Can't you imagine that you see it whether it is there or not?

A. No, sir.

Q. 57. Don't you, as a matter of fact, imagine that you see it all the time?

A. No, sir.

Q. 58. How many acres of forest land have you got on which you claim there has been damage?

A. We have got something like 15,000 acres; most of it has been damaged, but I wouldn't say that every lot has been damaged.

Q. 59. What interest have you in this 15,000 acres?

A. Something like 12,000 acres of it is my own, and me and my son own the others.

Q. 60. It is for the supposed damage to this forest that you have been suing the Ducktown Company?

A. Yes, sir. I have been suing them for damages to my land.

Q. 61. Isn't it true that you can travel for many miles here in Fannin County and see no evidences whatever of smoke damage?

A. There may be some sections. I don't see any. It don't get all over the country at one time; it has different channels through which it travels.

Q. 62. Where are any sections that you don't see any evidence of smoke damage?

A. I don't see much here in Blue Ridge. I have seen brown leaves there by Mr. Engel's.

Q. 63. Do you know what browned them?

A. I didn't get off to examine them closely, but I think that it's smoke.

Q. 64. Isn't it a fact Mr. Vestal that every time you see a brown leaf you suppose that smoke browned it?

A. No, sir.

Q. 65. Do you know of any other disease that browns the leaves?

A. I wouldn't say. A fire might turn it brown, or worms.

Q. 66. Do you know or are you familiar with any other disease of timber, except the trouble arising from these fumes?

A. I am not an expert, but I know when I see smoke
227 damage.

Q. 67. Can you tell the difference between a chestnut tree dying from the fung-us disease and smoke injury?

A. I think I can.

Q. 68. Did you ever see a chestnut tree die of the fung-us disease?

A. I have see'd trees die from other causes besides smoke.

Q. 69. Did you ever see a tree that died from the fung-us disease?

A. I don't know what the fung-us disease is.

Q. 70. You don't know what it is, yet you swear that you can tell the difference between a tree dying from the fung-us disease, and one dying from smoke?

A. I see trees traveling about frequently that has died from something else. I know how the appearance from some is and I can tell when they die from something else.

Q. 71. Tell me about these other stretches of country where you see substantially no evidence of smoke disease?

A. In Fannin County?

Q. 72. You have mentioned Blue Ridge?

A. I haven't been over back in Fannin County; back East for some time; not this year; I haven't been any further South down here than the county line.

Q. 73. So anyway the smoke affects Fannin County. Now then in the same locality or spot which may be a few acres or may be a few miles, the smoke comes in from time to time and scorches the leaves?

A. It does; it comes in and scorches the leaves, if it is serious.

Q. 74. And if that is repeated through a few years, you think that will kill the tree?

A. Yes, sir, it will eventually kill it.

Q. 75. What tree have you ever seen die with one application of smoke?

A. I can't say any certain particular tree. I have noticed the forests and have been in the woods for twenty years of my life.

Q. 76. Don't you know that the forests of North Georgia are badly effected from other causes than smoke?

A. I think that some of them died from other causes.

Q. 77. Don't you know that a great many trees have been killed by forest fires?

A. We have very few forest fires in North Georgia.

228 Q. 78. Don't you know that you have wood fires here every year?

A. More or less, that's right.

Q. 79. Don't these wood fires practically kill all of the underbrush?

A. If it is very dry and there are plenty of leaves, it will kill the underbrush.

Q. 80. Kills the growth for the season?

A. What is on the ground that is dry, it kills.

Q. 81. Isn't that the cause of the death of the underbrush?

A. If it comes in it will kill it.

Q. 82. Now, as a matter of fact, you never knew of the smoke killing the underbrush, did you?

A. Yes, I have seen it frequently.

Q. 83. You have gone along and have seen a little shrubbery and some little twigs browned, and you thought it was browned by smoke?

A. I know that it *has*.

Q. 84. How do you know it?

A. By noticing it.

Q. 85. But it may have died from other causes?

A. I could tell if it had died from other causes.

Q. What other causes could you tell?

A. Fire; if fire had been there I could tell and could see.

Q. 87. Suppose that it had died from want of circulation as was said by Dr. Hedgecock, could you tell that?

A. You mean drouth?

Q. 88. Well, for want of circulation?

A. We didn't have any drouths; haven't had any long enough to kill a tree.

Q. 89. As a matter of fact a tree that is killed by the drouth has exactly the same appearance as when killed by the fumes don't it?

A. As a rule a tree killed by smoke dies in the top. I think in the drouth it sheds the leaves.

Q. 90. Don't you know that when a tree dies from the drouth that it begins to die in the top, because that is furtherest from the root that feeds it?

A. I don't think we have any trees that died from drouth.
229 Q. 91. Did you ever see a tree die from the drouth?
A. I don't know that I have; I don't remember specially.
Q. 92. Maybe you have seen a great many trees die from drouth, and maybe you thought they died from smoke?
A. No sir, I don't think I did.
Q. 93. How do you know whether you know the difference?
A. I know that when the smoke comes along and kills the leaves you can tell it.
Q. 94. Anyway, coming back to the vegetation that grows close to the earth and holds the soil together, a great deal of that is killed by the forest or wood fires?
A. The wood fires kill the underbrush, of course.
Q. 95. You never have seen much of that killed by this smoke?
A. Yes sir, a right smart of it.
Q. 96. How much did you ever see of it?
A. A good deal of it.
Q. 97. Did you ever see a half acre?
A. Yes sir, I have seen more than ten acres where it was killed.
Q. 98. Where did you ever see ten acres of it that was killed by smoke?
A. I have seen it in many different places; very few trees are killed by forest fire.
Q. 99. I am not talking about the fires killing the trees, I am talking about the smoke killing the underbrush?
A. I have seen more than ten acres killed by the smoke.
Q. 100. Where did you ever see ten acres killed?
A. On Barnes mountain, I think I have seen 25 acres more or less that was killed.
Q. 101. This year?
A. Yes sir, the underbrush.
Q. 102. You can't tell to save your life whether that has been killed until next year, can you?
A. I know that the young leaves are brown now all around.
Q. 103. But you don't know whether it has been killed or not?
A. Not altogether, but it is injured.
Q. 104. Do you know Mr. Oliver?
A. Yes sir.
Q. 105. Go by his place?
A. Yes sir.
Q. 106. Ever examine his orchard?
A. No sir.
230 Q. 107. Why didn't you?
A. We didn't have any orders to go in there.
Q. 108. See any damage on his place?
A. I did East of his place.
Q. 109. How far from his place?
A. I think a quarter of a mile.
Q. 110. Where does he live?
A. I think it's on 21 and 22.
Q. 112. How far is that from Epworth?

A. Let me see; ninth and second; eighth and second. Epworth is I expect four or five miles; that's a guess.

Q. 113. Your land has been cut over once or twice for lumber hasn't it?

A. Part of it has.

Q. 114. How much of it?

A. I expect, at a guess, I would say that 50% has been cut for the poplar and the white pine.

Q. 115. Necessarily cutting those trees would injure the remaining trees?

A. To some extent it would.

Q. 116. You left the laps in the woods?

A. Yes sir.

Q. 117. When the fire gets into those laps it makes it that much more destructive?

A. I would think so, yes sir.

Q. 118. Don't you know that leaving this dead wood in the forests will breed disease which will infect the other timber in that locality?

A. I think it would if it was cut in the summer. It is very likely that worms would get into that, and from that into the other timber.

Q. 119. Haven't you know- of forests to be almost destroyed that way?

A. I haven't here in the mountains. I don't know of but two places to speak of that have been damaged by forest fires right at this time. I can't recall but two.

Q. 120. Haven't you known of hickory to die of some other disease than smoke?

A. I have seen hickory die from other causes.

Q. 121. Don't you know for a fact that the worms get into the hickories, and haven't you got hickories cut almost to a pulp by the worms?

A. We never cut much hickory: very little hickory timber. We cut the white pine and the poplar, and some chestnut; we tried to cut the best part of the white pine, the poplar and the chestnut.

231 Q. 122. At these particular spots and places where you saw so much dead timber, there has been forest fires in there every year, hasn't there?

A. Possibly wood fires; that didn't kill the timber. I know enough to know that it didn't kill any percent of the timber.

Q. 123. Don't you know that the forests through there have been cut over?

A. Part of them. I have seen places where 50% of the timber would be dead plum out of the way of a saw-mill.

Q. 124. What kinds?

A. White Pine, Oak, Chestnut, Hemlock.

Q. 125. Don't you know that the white pine and chestnut is dying all through these mountains here in the south?

A. I don't.

Q. 126. Don't you know it from your reading and from your knowledge?

A. I am so unfortunate as not to be able to read.

Q. 127. From your experience as a lumberman don't you know it to be a fact that the Hemlock, white pine and the chestnut are dying all over these Southern mountains?

A. Well, I can't say that they are.

Q. 128. Haven't you heard that in your business?

A. I have heard that the chestnut is dying.

Q. 129. Haven't you heard that the Hemlock is dying also?

A. I don't recall that I have heard that the Hemlock is dying in other sections.

Q. 130. Haven't you traveled over sections of the South?

A. Very little. I haven't been no further than Atlanta in some years.

Q. 131. In your travels to Atlanta, haven't you seen a good deal of dead timber?

A. There ain't a great sight of timber along the road; there is some dead timber anywhere I go; a small percent. While I was on the way to and from Chattanooga I noticed all along, and I don't think that over one per cent of the timber is dead.

Q. 132. That is in the Tennessee valley there?

A. Yes sir.

Q. 133. Ridges on either side?

A. Yes sir; I looked at good timber on one side.

Q. 134. In regard to your crops, you haven't been trying to raise any oats for a numner of years?

A. No sir, I haven't myself.

Q. 135. Years ago you did raise them?

A. Yes sir.

232 Q. 136. What kind did you raise, Spring oats?

A. Yes sir.

Q. 137. Did you ever try to raise any winter oats?

A. I haven't any knowledge of sowing any winter oats but one time.

Q. 138. Don't you know it to be a fact that through quite a large section of the South the Spring oat has played out, and that they are now sowing the winter oat altogether?

A. I haven't paid enough attention to farming for the last twenty years to know what they are doing.

Q. 139. I believe that you say that potatoes are one of the most delicate things in your gardens?

A. Yes sir, about as delicate as most anything in our gardens.

Q. 140. Tomatoes are also delicate?

A. This year the tomatoes have stood it better than they usually do.

Q. 141. What about peas?

A. It's bad on peas.

Q. 142. Do you Mr. Gillam?

A. Yes sir.

Q. 143. Have you seen his crop of peas this year?

A. I have passed along the road by them, but I never paid any attention to them.

Q. 144. How far is that from Ducktown?

A. You mean the Ducktown plant?

Q. 145. Yes?

A. It's six or seven miles.

Q. 146. And three or four miles from the Tennessee Copper Co.?

A. I don't know the distance; I am a poor hand to guess distances.

Q. 147. You took Dr. Hedgecock through there?

A. Yes sir.

Q. 148. You didn't point out these things to him?

A. No, I didn't stop to look at any crops.

Q. 149. As a matter of fact you wasn't looking for good fields of peas and corn, and good gardens, and forests that the smoke didn't effect, but you were after points you thought were effected?

A. I looked at everything I seed, and where we saw any place that looked like it had been effected by smoke, we looked at that.

Q. 150. You were looking for smoke injury, wasn't you?

A. We was looking to see the condition of the country, whether it was damaged, or not damaged.

233 Q. 151. You say that it was from 1905 up to 1910?

A. Yes sir, they was about the years we had it bad.

Q. 152. Didn't you mean that it was about the beginning of the year 1906, the Spring of 1906?

A. That would include 1905; from 1905 to 1910.

Q. 153. That is from 1905?

A. Yes sir, up to 1910.

Q. 154. As a matter of fact, didn't it begin to do injury when that high stack was built?

A. It begun to do injury on our land as far back as eighteen years ago.

Q. 155. You paid no attention to it did you?

A. Yes sir, a man could look at it and tell it. I saw it myself.

Q. 156. What did you see?

A. I saw white pines turning brown and shedding their leaves.

Q. 157. When did you see that?

A. That commenced way back yonder, when I first went back in there.

Q. 158. You had a lots of white pine when that high stack was built?

A. Yes sir, more than we have now.

Q. *157.* You had quite a quantity?

A. Yes sir.

Q. *158.* Didn't the real damage that you are complaining of begin when that high stack was built?

A. It was damaged all along from eighteen years ago up to 1905, and from 1905 to 1910 it was worse.

Q. 159. Answer my question, the real damage that you are complaining about began when that high stack was built, didn't it?

A. I don't remember what year the high stack went up. I saw damage before that.

Q. 160. The first year that you noticed any material damage was during the season of 1906, isn't that true?

A. I think it would go back to 1905; it was very bad in 1905.

Q. 161. What makes you remember that?

A. I moved to Epworth in 1905.

Q. 162. Where did you go there from?

A. Madola.

Q. 163. You hadn't noticed it at all at Madola?

A. Yes sir.

Q. 164. This damage that you mention, that was to the white pine?

234 A. Yes sir.

Q. 165. 1910 was as bad as you saw?

A. No, it wasn't bad in 1910; it was bad up to 1910. 1909 was a bad year.

Q. 166. How about 1911?

A. It wasn't so bad that year.

Q. 167. Was there any damage at all?

A. Yes sir, there has been damage every year.

Q. 168. What was damaged?

A. Timber of all kinds, except poplar. I can't see that the poplar was damaged but very little.

Q. 169. How was 1912?

A. About like 1911.

Q. 170. I believe that you said that 1913 was some worse?

A. It was a good deal worse.

Q. 171. What day did you notice it especially in 1913?

A. The 12th day of May.

Q. 172. That the day after you lost the law suit?

A. That was the day after I got home.

Q. 173. You say at that time you had lost your law suit?

A. No sir, I hadn't lost it; we made a mistrial that court.

Q. 174. You had been trying it and failed to get damages?

A. The jury hung and made a mistrial that time.

Q. 175. What did the smoke do then?

A. It bit the garden peas; green peas.

Q. 176. What did it do to the green peas?

A. It almost killed them.

Q. 177. Those peas afterwards matured and made peas, didn't they?

A. No sir, the peas was almost a failure.

Q. 178. What else did it kill; about how many peas did you have?

A. I had about three rows across the garden.

Q. 179. What else did you have that was interfered with?

A. My beans and my corn; my corn was injured.

Q. 180. How much?

A. An acre and a half.

Q. 181. You did make corn?

A. Made a little.
Q. 182. How much?
A. I didn't measure it.
Q. 183. Now, as a matter of fact didn't you gather as much as you would have any way?
235 A. No sir, because it killed some of it, and some of my croppers, it killed their corn. I saw it myself.
Q. 184. Do you know whether or not any smoke had been in there while you were in Chattanooga?
A. No sir, I don't.
Q. 185. Do you know of your own knowledge?
A. How could I know, when I wasn't there.
Q. 186. How long had you been over at Chattanooga?
A. For some time. I left home on the first, and it was the 11th when I got back.
Q. 187. Mr. Vestal, I believe you say that you noticed smoke in there, on what day was it in June that you saw it in there?
A. I said the 3rd day of July.
Q. 188. I thought you said that it was in June?
A. It come over there in June, but this other I know was on the third of July because we had a big picnic on the 4th, and I remember that it was the third of July.
Q. 189. What did you say that hurt?
A. I saw it on the potato patch. I planted a second patch of potatoes; it killed my first crop, and it killed the leaves on my second crop.
Q. 189. I am talking about the first crop?
A. It come in there back on the 8th and 9th of June and killed the first crop; that was a failure.
Q. 190. And you had planted a later crop?
A. Yes sir.
Q. 191. And that had come up?
A. Yes sir.
Q. 192. When did you plant that?
A. Sometime in June; it had just come up.
Q. 193. What day of the week was that that you saw that smoke in there?
A. It was Friday.
Q. 194. Friday, the third day of June?
A. The 3rd day of July, sir.
Q. 195. What did it do to these potatoes?
A. It bit the leaves.
Q. 196. How much?
A. It crisped the leaves; they wasn't serious bit, but they crisped up until I knew that it was smoke, because it was in my garden that day.
236 Q. Didn't you have some pretty dry weather right along about then?
A. We had three weeks of dry weather in June, one time.
Q. 198. Don't you know that the dry weather extended over the fourth of July?

A. No sir, I think that it rained the fourth of July.
Q. 199. Don't you know that that rain broke up that dry spell?
A. No sir, I think that it rained before that.
Q. 200. Do you know that it did or that it didn't?
A. I do know that we didn't have much dry weather.
Q. 201. So it is, that on the 3rd of July, you think something happened that crisped up the leaves on your potatoes?
A. I know that the smoke bit them on the 3rd of July.
Q. 202. Are you going to swear that positively?
A. I know that I saw the smoke in there; and I saw this other directly after it left.
Q. 203. What time of the day was it in there?
A. Forenoon of the day like.
Q. 204. Crisped up that afternoon did they?
A. Yes sir, they did. We smelled the smoke and talked about it.
Q. 205. They withered right up?
A. Yes sir.
Q. 206. Hurt the patch?
A. I know that it hurt it some; I don't know how much. I hadn't plowed them.
Q. 207. How much did it hurt them?
A. I can't say.
Q. 208. Did they grow right on off? A. No sir, they died later from other smoke.
Q. 209. When were they killed?
A. I don't know how many times the smoke come down in there on them.
Q. 210. When did the next smoke come in there after the third of July?
A. I think,—my recollection is that it was 'long about July 12th; I think there was three days along then that it come in there.
Q. 211. Beginning on the 12th?
A. I think now, about the 12th; I don't remember just what date.

Q. 212. I believe that you stated the smoke had been in
237 there the whole summer?
A. Yes sir, off and on, all the summer.

Q. 213. Ta-king specially about the 3rd of July, let's go back to say the 28th of June, didn't you see it there on that day?
A. I don't know that I did.
Q. 214. Was there a single day during this summer that you didn't see this smoke come in there?
A. I don't say that there was; or I don't say there wasn't.
Q. —. How long had it been before the 3rd of July before you had seen any smoke in there?
A. Sometimes for a week or more the smoke wouldn't bother us.
Q. 216. Did you see it come over there during the last week in June?
A. I don't know that I did. I know it come over there on the 3rd of July.

Q. 217. What is the reason that you can remember that; it wasn't so much?

A. I don't know why it is; but I remember that all right.

Q. 218. Did you see it come over there after the 20th of June and before the first of July?

A. From that time up to now?

Q. 219. Between the 20th of June and the 1st of July, did you see any smoke come over there?

A. I don't know that I did or didn't. I know that we saw smoke there frequently; sometimes for two weeks together wouldn't any come.

Q. 220. About the crops over on Jacks River, they in good condition?

A. They seemed to be pretty good. I saw some potatoes that had been bit.

Q. 221. Didn't anything suffer but potatoes on Jacks River?

A. It looked to be light; I can't say that it was smoke.

Q. 222. How were the crops on Jacks River last year?

A. I think they was fairly good, but there was right smart of damage to the timber, though.

Q. 223. It don't hurt the timber one time and hurts the crops, and then it hurts the crops and don't hurt the timber?

A. It don't serve anything just alike. Sometimes it bites one thing strong, and then again it don't seem to have an effect;
238 It will bite some trees worse than others, and may be next time, it won't hurt them same trees so bad.

Redirect examination by Mr. DRAKE:

Q. 1. You have been asked a good deal about hickory, you know the nature of timber pretty well, don't you?

A. Yes sir.

Q. 2. How is that in its resisting power against insects and bugs generally as compared with other timber?

A. Well sir, I am not much of a bug man, and can't say.

Q. 3. Asking you from a saw-mill man's standpoint, how is it? Is it good sound, solid timber?

A. I think it is. I think that it is all right and healthy as any other timber.

Q. 4. I believe you stated, if not state again, if you haven't found that in this North Fannin County, whether or not it has all been killed or dead?

A. A great percent of it has been killed, sir.

Recross-examination by General FOWLER:

Q. 1. Did you ever saw any hickory timber?

A. Very little, only a small per cent.

Mileage of witness: 16 Miles.

T. S. JOHNSON, being sworn to speak the truth, the whole truth and nothing but the truth, testified.

Direct examination by Mr. HILL:

Q. 1. Where do you live, Mr. Johnson?

A. I live out over in the Carter Cay district, seven miles East of Ellijay.

Q. 2. How long have you been living there?

A. Pretty near six years.

Q. 3. How long have you lived in Gilmer County?

A. All of my life except about five years.

Q. 4. When was that?

A. When I was 19 years old, I lived in Alabama.

Q. 5. How old are you now?

A. I will be sixty about the 25th of March, next.

239 Q. 6. Have you or not seen smoke in your section?

A. Yes sir, very frequently.

Q. —. See it and smell it?

A. Sometimes we would smell it.

Q. 8. What would it smell like?

A. It smelt like sulphur.

Q. 9. What does it look like?

A. It looks a kinder dark color, like common fire smoke.

Q. 10. How long have you been seeing it down there?

A. Ever since I have been living down there. Six years.

Q. 11. How often does it come in there?

A. Sometimes very often; every day for a week maybe, and then for a week we don't see any.

Q. 12. Which way does the wind come from when the smoke comes in?

A. It is generally from the North when it settles in.

Q. 13. Have you ever been up around the plants up here?

A. No sir.

Q. 14. What do you raise, what sort of crops do you raise?

A. Corn, beans, peas, wheat, vegetables of all kinds with the exception of oats; we haven't raised no oats for the last four or five years.

Q. 15. Have you ever examined your crops a short time after this smoke would come in there?

A. Yes sir, I have looked at my corn after the smoke settled in it, and it would be kinder parched up.

Q. 16. Have you seen it come down in there in silking and tasseling time?

A. Yes sir. It will kill the silks. Last year my corn had fine long silks on it, at least nine inches long, and the smoke come in there and settled down, and I went back there to look at it, and the silks was all parched up and we didn't make no corn like we ought to.

Q. 17. Did you ever notice it on the peas and beans?

A. Last year I planted peas, and after that smoke come down in there they all parched up and didn't do anything. This year I haven't tried to raise none.

Q. 18. Why?

A. I think something is killing them, and I believed it was the smoke.

Q. 19. Ever notice any potatoes?

A. Last year my potatoes parched up, and this year I had
240 I had a little patch down on the branch; I planted half of my garden there, and I planted a quarter of an acre on top of the hill up above them, and them 'tater vines they died out this summer, and them on the hill crisped up after we had a two day's smoke; them on the branch it killed them.

Q. 20. What two days were those?

A. I don't remember the dates, but it was about the time we laid by our 'taters.

Q. 21. Have you seen this smoke before then and since then?

A. Yes sir, off and on all the time.

Q. 23. What was the worst year, if you can say, that the smoke has been in there?

A. Last year was the worst. I never got a half crop of corn. I think I made 50 bushels and I ought to have got 125.

Q. 24. What effect does the smoke have on your crops, does it make them larger or smaller?

A. It makes them produce less. Last year, I could have made a third more if the smoke hadn't parched it.

Q. 25. How about oats, wheat and rye?

A. I sowed oats the first year and never got any, and I haven't sowed any since.

Q. 26. Ever notice the effect of the smoke on the other small grain?

A. Yes sir, a little. The wheat and the rye don't make full plump grains, like it ought.

Cross-examination by General FOWLER:

It is agreed by counsel for the State and for the defendant that the witness lives 24½ miles, air line, in a nearly due South direction from Copperhill and 26½ miles air line from Isabella.

Q. 1. You have just lived there six years?

A. No, I have lived around Carter Cay a good long time; only six years where I am now living.

Q. 2. How near did you live to Carter Cay?

A. Three miles.

Q. 3. What direction?

A. A little Northeast, I think.

Q. 4. Then you moved there in 1908——?

241 A. I disremember the date; it is six years ago this fall since I moved to the place I now live.

Q. 5. And you say you think that last year was the worst year on your crops?

A. Yes sir, it hurt my crops worse than any year I have been living there.

Q. 6. Your corn was hurt?

A. My corn and beans was hurt worse than anything else.
Q. 7. You mean your garden beans?
A. Tomatoes and garden beans both.
Q. 8. You raised beans didn't you?
A. Yes sir.
Q. 9. Last year?
A. I got a few messes last year; we generally raise them every year.
Q. 10. Hurt your potatoes last year?
A. Yes sir, it parched up the potatoes last year; it parches them up nearly every year.
Q. 11. You raised potatoes?
A. Yes sir.
Q. 12. Dry weather parches potatoes too, don't it?
A. Yes sir.
Q. 13. Then sometimes the bugs get on them?
A. Yes sir, but there ain't no bugs on mine this year, nor last year either, I believe.
Q. 14. Mr. Johnson you have been raising potatoes a great many years?
A. Yes sir.
Q. 15. Isn't it a fact that some years you will only raise about half a crop of potatoes on the best land you've got, and not be bothered with smoke at all?
A. I don't know about that, if we have a good season.
Q. 16. It depends on the seasons, don't it?
A. Yes sir.
Q. 17. In some seasons your potato crops fails in there regardless of smoke?
A. Some seasons a man don't get so many.
Q. 18. Now isn't it a fact, that some seasons you don't raise hardly any potatoes, regardless of the smoke?
A. I used to raise some mighty good ones.
Q. —. How long ago?
A. When I lived back up on the Blue Ridge up in the coves of the mountains.
242 Q. 20. A great deal nearer to the furnaces?
A. Yes sir, it was nearer, some nearer.
Q. 21. Wasn't it about half the distance?
A. That was before them chim*b*leys was put up.
Q. 22. How long ago has that been?
A. It has been a good long time.
Q. 23. Ten years?
A. Yes sir, ten years or longer.
Q. 24. It's the same way with corn too, isn't it; some seasons you raise good corn, and some you don't?
A. When I lived up in there some years I made corn that wouldn't be good, but I hardly ever failed to make good corn.
Q. 25. Take the same land, some years it will make a good crop and next year it won't make a good crop; that's true.

A. Sometimes a man's land won't make a good crop on account of the season not being good.

Q. 26. Did you make a good crop of corn in 1912?

A. I disremember; I guess not though.

Q. 27. Can't you remember about it?

A. That has been three years ago.

Q. 28. You can't remember whether you did or not?

A. No sir, I don't remember in 1912, only I had sorry crops. My crops have been sorry ever since I have been on that place.

Q. 29. Maybe it's not a good place?

A. Yes sir, it is.

Q. 30. Have you got a good corn crop this year?

A. No sir, not so very good.

Q. 31. Have any drouth this year.

A. Yes sir, it has been pretty dry down there, but it don't seem like it has hurt the corn much this year.

Q. 33. How much corn did you make last year?

A. I made 25 bushels, and I ought to have made 50.

Q. 34. Did you ever make 50?

A. No sir.

Q. 35. How much did you ever make on it?

A. That's about as much as I ever made.

Q. 36. Last year, did you fertilize it?

A. Yes sir, I put the same I generally do, 100 to 200 pounds to the acre of guano. I know that something cut it off, I never could tell what it was.

243 Q. 37. I believe you said that the smoke was in there two days, was it the 8th and 9th of June?

A. It was along in the summer some time. I could see the smoke, but I never paid any attention to the time; I could I reckon have set down the dates, but I didn't and I can't remember.

Q. 38. Wasn't it during the first of June?

A. It may have been. I know that them two days the smoke come in there and settled down like the woods was afire.

Q. 39. How long did it stay in there?

A. Pretty much all the evening.

Q. 40. Have you filed a claim before this board of arbitration?

A. No sir.

Q. 41. You are expecting to, aren't you?

A. I don't know; I haven't thought about it. I ought to have some damages. If they will stop the smoke off my stuff, I will give them the damages.

Mileage of witness: 48 Miles.

JOHN MILLER, Sworn to speak the truth, the whole truth and nothing but the truth, testified.

Direct examination by Mr. DRAKE:

Q. 1. Where do you live Mr. Miller?

A. On Weaver Creek in Fannin County, about two miles South of Blue Ridge.

Q. 4. How long have you been living in that neighborhood?
A. Nineteen years last February.
Q. 5. What is your occupation?
A. Farmer.
Q. 6. How old are you Mr. Miller?
A. Forty seven years old.
Q. 7. If you have ever observed any sulphur smoke in that neighborhood for the last few years, tell all about it?
A. Yes sir, I have. It comes in there and settled down on the timber, and after it settles down on the timber the leaves turn brown and drop off, and when it settles on the timber as much as the second time the timber dies. When it settles down over the orchards the leaves turn brown and crisp up and it kills it. In some places
244 it will stop the growth of the timber for that year. When it settles down on the peaches, the peaches begins to rot and dry up and drop off, and if it settles down the second or third time it generally kills the trees. When it settles down on the irish potatoes, the leaves begins to turn brown and the blooms drop off and it stops the 'tater right there, something about like a frost would, you might say. When it settles down on the corn, it commences to spe-k up and turn yellow and it will turn the tassel black, and the top and tassel will give down that way, and the tassel dies, and the corn don't do no good and don't make no corn to amount to anything, and the fodder is rotted and speckled up brown, and it ain't no good. I have got some that way, and I didn't gather no corn; it wasn't no good at all.
Q. 8. What year was that?
A. That was back about six years ago.
Q. 9. How has it been for the last two or three years?
A. For the last two or three years it has been right bad on my place. When them fumes comes in there and settles down on the timber, it burns the leaves and they drop off, and along this summer it has been the same way.
Q. 10. Have you seen much smoke down in there this summer?
A. Yes, sir, it has been in there every few days through June, July and August; Sunday it was in there pretty bad and last Monday it was in there.
Q. 11. Was there any smoke in there in 1913 last year?
A. Yes sir, smoke was in there in 1913 and in 1914 and 1912; all along there; it has been in there bad for the last five or six years.
Q. 12. Has it killed any timber in that neighborhood?
A. Yes sir, it has killed a sight of timber, and the timber is there to show for itself; lot of trees there that the leaves have turned brown and drop off, sorter like frost had bit them for six years back, and some of the trees is dead and lying on the ground. It has ruined my water-melons, and my sweet 'taters, and irish 'taters. The fumes of this smoke would settle down in there. I could see it and smell it. When a man can see this smoke and smell it and taste it, and see it do this damage what else can it be but the smoke.
I don't ask no man to take my word for it; I can prove what
245 I say by as good citizens as there is in the country, and I can take a man and show him what it has done, and that's

all I have got to say. It has damaged the crops all these years in there I am satisfied over 100%. I have got 300 peach trees and apple trees, and my apple trees is drooping and dying and crisping up from the fumes of this smoke in there, and it wasn't like that until this smoke did come in there, and it's right there to see. I live fifteen miles from Ducktown a South course and before this smoke come in there and settled down about six years ago I had good crops, and after it come in there everything has turned yellow, not plum yellow but yellow spots, and the blooms sheds off. I had four potato patches and I didn't make but about four bushels, and then they wasn't no good, the 'taters was little; not bigger'n my thumb.

Q. 13. I will ask you this, if before you were bothered by this smoke you could raise irish potatoes?

A. Yes sir, as fine as you ever saw; irish potatoes; sweet potatoes, anything you wanted, and we had all the apples and peaches we wanted. Then we had fine corn, beans and pumpkins. When that smoke would come in there and settle on my pumpkin vines they would all crisp up that way, and I have hauled off as many as five and six loads of pumpkins; and my pea vines, when that smoke would come down on them, the leaves would all crisp up and die and we wouldn't make any peas; the leaves would drop off on the ground and I can't raise no peas any more.

Q. 14. I believe you said that was a good country for peas naturally?

A. Yes sir, we could make fine peas before that smoke commenced coming in there, and since then we haven't been able to raise any peas at all. Last year my pumpkins done tolerable well, but my peas, the bigger part of them shed their leaves.

Cross examination by General FOWLER:

It is agreed between counsel for the State and the defendant
246 that the witness lives 12-1/2 miles air line, in a direction a little East of South of Isabella, and 11 miles from Copper Hill.

Q. 1. How long have you been living there?

A. Nineteen years on the 15th of February, since I come to Fannin County. I was born and raised in Gilmer County. I have lived ninteen years at that place.

Q. 2. Do you own the place?

A. Yes sir; I own lot 26, fifty acres; lot 27, 50 acres, and lot 47, 60 acres and lot 25, 40 acres.

Q. 3. How many acres of land have you under cultivation?

A. 30 to 40 acres, in corn.

Q. 4. The remainder of that in timber land?

A. I have got 75 or 80 acres cleared and the rest of it is timber land.

Q. 5. You own the timber?

A. Yes sir, I own the timber.

Q. 6. That ever been cut over?

A. Mr. Bell cut some timber out of there about four years ago.

Q. 7. Over how much?

A. He cut—I don't know exactly how many acres; he cut some on lot 26 and some on 47 and some on 25.

Q. 8. He cut what varieties of timber?

A. He cut some of the poplar, some pine and some oak.

Q. 9. Been any forest fires over your lands?

A. No sir, not to amount to anything for several years; we have about quit burning the woods on account of the timber.

Q. 10. When was it last burned over?

A. It was last burned down in there about two years ago, I believe; there wasn't much burned; none you might say on my land.

Q. 11. You have known your lands to be burned over entirely by fire?

A. Yes sir, they was burned over about ten years ago, but it was pretty well along in the fall of the year after the leaves had all fell off.

Q. 12. Has it been burned partly since that time?

A. Yes sir, some of it has been burned since that time, in the fall of the year, not much but a little of it. I stopped it.

247 Q. 13. How did you stop it?

A. I stopped it by getting a brush and beating it out in front of the fire, and I kept that up until I got the fire out.

Q. 14. I believe you *daid* that you hadn't noticed any smoke until about five or six years ago?

A. I noticed it over five or six years ago; it was in there but I wasn't positive that it was this smoke that was doing this damage then. After that we took notice of these things it was doing so much damage in our crops and our forests.

Q. 15. When was the first year that you noticed the smoke in *in* there doing any special damage?

A. It was about six years ago.

Q. 16. Then it was in 1908?

A. Yes sir.

Q. 17. What did you notice at that time?

A. I noticed my timber and my corn. It settled in my corn there one day and I was back up there the next morning, and it attracted my attention to the corn; the corn looked like it was frost bit; it was drooping down just like it was frost bit, and right straight after that it commenced to speck up and turn yellow; yellow specks on it, and then it would dry up, and at the lowest calculation there was at least 100 bushels of that corn rotten, and it couldn't have been nothing else but that smoke, because just as soon as it settled in there the shuck turned brown and from brown to black, and it couldn't be nothing but that smoke, because I never did have corn in my life, until the fumes of this smoke come in there that done it that way; it just wilts down and in a few days it turns brown, and in a few days the leaves drop off. Then after the fumes of this smoke come in there and settled down on the timber the leaves would turn brown with brown speck on them; it first commenced like frost bite; it has them brown specks and then

it turns brown, and they begin to drop off, and a heap of them trees dies after it hits them the second time. I can show trees that it has bit. I don't ask no man to take my word for it; the timber is there to show for itself, and I can show you apples trees; I can show you exactly how they are. On the corn it don't
248 settle on it altogether. It will settle on one stalk here and two stalks there; some pretty close together, and it will kill it plum dead, and the next time it comes in it will settle on the other corn that it didn't kill before, and wipe the whole thing out. And the tomatoes, when it settles on the tomatoes it just dries up and it kills the tomato just like frost bite.

Q. 18. Are you through now?

A. I am just telling you what it does.

Q. 19. Are you done?

A. I reckon so; it ruins my cherry trees.

Q. 20. Then, you are not done?

A. It dries up my cherry trees just like it does the timber.

Q. 21. It hasn't dried you up, has it?

A. It aint dried me up, and if you had to work as hard as I do, and see your stuff all ruined——

Q. 22. I guess I work as hard as you do.

A. I work hard for my living, and I pay my taxes and I am a citizen of my county.

Q. 23. I am asking you when that smoke come in there?

A. That smoke?

Q. 24. Yes that smoke, I believe you said that it was five or six years ago?

A. Six years ago was when I noticed something coming in there and damaging me.

Q. 25. Well, that was 1908?

A. Yes sir, about six years ago.

Q. 26. You had some corn you say rotted that year?

A. Yes sir.

Q. 27. How was it in 1909?

A. Well, we had some smoke in there, but it didn't damage me like it did six years ago.

Q. 27. How was it in 1910?

A. I can't tell you much about that year because I didn't pay so much attention to it until about six years ago.

Q. 28. How was it in 1911; that was three years ago?

A. 1911? We have had some smoke in there every year; had some every year more or less.

Q. 29. How was it in 1912, two years ago?

A. We had a lot of smoke in there and it done a lot of damage.

Q. 30. How was it last year?

A. Last year we had a whole lot of smoke in there and it done a right smart of damage, and it has every year back up until
249 six years ago.

Q. 31. Did you see it in June of this year, during the whole month of June?

A. I didn't see it the whole month of June, but along in June we had smoke in there.

Q. 32. Did you have it the first part of June?

A. I never noticed any the first part of June.

Q. 33. What part of June was it?

A. As well as I remember it was along after the 10th of June; along that way.

Q. 34. And after the 15th of June?

A. I disremember about that.

Q. 35. After the 20th?

A. We had it along in June, I don't remember the dates.

Q. 36. After the 25th of June, didn't you have more of it the latter part of June than you had along in the first of June?

A. We had some along about the 10th of June, as much as at any time.

Q. 37. Did you have as much the latter part of June as you did the first part of June?

A. I don't think we did.

Q. 38. How much did you lack?

A. I don't know how much.

Q. 399. You don't know whether they had any at all in June, do you?

A. Yes, we had some along in June.

Q. 40. What time in June was it?

A. Let me see—I put it down in my book.

Q. 41. What kind of a book did you put it down in?

A. I put it down in my day book?

Q. 42. Where is that book?

A. I give it to one of my friends, and I told him to keep it in there.

Q. 43. Have you got that friend here as a witness?

A. Well he said that he would be here to-day and I wanted to see whether he had come or not.

Q. 44. Who is he; what is his name?

A. It's one of the Buchanans.

Q. 45. Which one of the Buchanans?

A. It's one of the Buchanans; he ought to have it himself.

Q. 46. You give it to him?

A. I left it there at his house.

250 Q. 47. Why did you leave the book at Buchanan's; why didn't you keep it yourself?

A. Because we taken the time and set it down on the book and left it there on that account.

Q. 48. Did you put it down or did he put it down?

A. He put it down himself.

Q. 49. Any way, you haven't any independent recollection when there was smoke in June at your place?

A. As I remember it it was along the 9th and 10th of June, along there.

Q. 50. I believe, Mr. Miller, you have filed a claim for damages have you?

A. Yes sir.
Q. 51. With this board of arbitrators?
A. Yes sir.
Q. 53. How much are you claiming?
A. I am claiming, as well as I recollect, $250.00.
Q. 54. That extends over what length of time; over what years?
A. For this year.
Q. 55. You are not claiming anything for last year?
A. Yes sir, but I just put in what they done to me this year; 1914.
Q. 56. Haven't they been paying damages in here for some years?
A. I have been paid some damages.
Q. 57. Through this board of arbitration?
A. Yes sir.
Q. 58. Have you received any heretofore?
A. Yes sir, I was paid some last year.
Q. 59. How much did you receive last year?
A. I got about forty dollars.
Q. 60. How much did you put in for?
A. I forget exactly how much.
Q. 61. How many years did you put in for?
A. I think I put in for $1,000 for all the damages for years back.
Q. 62. Out of $1,000 you received $40.00?
A. They gave me $40.00.
Q. 63. And you are claiming $250 damages for this year?
A. Yes sir, I sent it in for $250.00.
Q. 64. Have you been paid for this year?
A. No sir.
Q. 65. Has your claim been passed on?
A. No sir.
251 Q. 66. Do you know whether or not they have been on your propetry this year?
A. Yes sir, the come up there and was taking names, I think was their business.
Q. 67. You don't know what they have done with your claim?
A. No sir, I don't know what has been done about it.
Q. 68. One of the gentlemen is here in Blue Ridge now, isn't he, one of the arbitrators?
A. I don't know him.

Redirect examination.

By Mr. HILL:

Q. 1. I will ask you, if you know, if this arbitration board doesn't have a certain amount of money to distribute out among you citizens the best they can, and don't pretend to give you all you are damaged?
A. Yes sir, they just have a certain amount of money to divide among them that has suffered from the smoke fumes, and they ain't nothing like paid me what I am damaged.

Mileage of witness: 4 miles.

R. H. SMITH, being duly sworn to speak the truth, the whole truth and nothing but the truth, testified as follows:

Direct examination.

By Mr. HILL:

Q. 1. How old are you Mr. Smith?
A. I am 38 years old.
Q. 2. Where do you live?
A. I live over in Morgantown District; mile and a half from Morgantown.
Q. 3. Which direction?
A. South.

It is admitted by and between counsel for the State and the defendant that the witness lives 12½ miles Southeast of Copperhill and 13¼ miles from Isabella.

Q. 4. How long have you been living there?
A. I was born and raised on the place I am living on now.
Q. 5. Have you ever worked out at either one of the copper plants?
A. Yes sir.
252 Q. 6. Are you familiar with the odor and the appearance of the smoke that comes out there?
A. Yes sir.
Q. 7. Have you, or not, seen that smoke in your section of the country?
A. Yes sir, I have seen it there.
Q. 8. Do you raise crops over there Mr. Smith?
A. Yes sir.
Q. 9. What do you raise?
A. Wheat, rye, oats, corn, potatoes, watermelons and things of that kind.
Q. 10. Have you ever noticed the crops after the smoke had settled in there?
A. I haven't never taken special notice to it.
Q. 11. Is there any timber in there in your way?
A. Yes sir.
Q. 12. Have you ever seen the smoke in the timber?
A. Yes sir.
Q. 13. Have you ever noticed the timber after the smoke had been in there?
A. Yes sir.
Q. 14. What was the condition of the timber?
A. A lot of the timber is dead. I don't know what caused it. But after the smoke had been in there, three or four days afterwards it would turn brown like, like it does closer to the mines.
Q. 15. Have you seen it around the mines?
A. Yes sir.
Q. 16. State whether or not it is effected the same as it is around the mines ?
A. Yes sir.

Q. 17. I believe you say that nearly all of the timber is dead around there?
A. Yes sir.
Q. 18. Have you noticed the timber in there this year?
A. Yes sir, I have seen it in there several times.
Q. 19. How many days during the present year have you seen it in there?
A. I can't tell any certain dates except one time, and the reason I remember that is I went to Copper Hill.
Q. 20. What day was that?
A. The 3rd day of July.
Q. 21. Did you see any smoke in there then?
A. Yes sir; right there at my place where I live. We spoke about it. Me and another fellow was talking about it. We was talking about the smoke.
253 Q. 22. You went to Copperhill on that day?
A. Yes sir.
Q. 23. Was it running then?
A. No sir.
Q. 24. Did you look at the plant?
A. Yes sir; I was there in about 150 yards of it.
Q. 25. What plant is at Copperhill?
A. The Tennessee Copper Company.

Cross-examination.

By General FOWLER:

Q. 1. How long have you lived there?
A. Thirty-seven or eight years.
Q. 2. When did you first notice smoke in that section of the country?
A. It has been coming in there off and on for several years.
Q. 3. How many—five?
A. Yes sir, it has been that long.
Q. 4. Six?
A. I can't give you the exact time; I never paid any attention to it much.
Q. 5. Will you swear that it has been six years?
A. I don't know that I will.
Q. 6. What is your best judgment?
A. It has been that long; *give* or six years. I never paid any attention to it. I never thought about it and never tried to get anything.
Q. 7. Have you filed any claim?
A. No sir.
Q. 8. Do you own any land in there?
A. Yes sir, my father does.
Q. 9. You haven't considered any damages?
A. Well, we have; several others has got damages on both sides of us.
Q. 10. I am talking about you?

A. I am talking about that too: that's all I know about it.
Q. 11. You said something about some dead timber over there?
A. Yes sir.
Q. 12. What kind was it?
A. Spanish Oak; Red Oak; Black Oak and Hickory.
Q. 13. Do you know what killed it?
A. I don't.
Q. 14. You know nothing about the diseases of timber?
A. No sir I don't and ain't claiming to.
Q. 15. How long has that timber been dead?
A. Four, five, six or seven years.
254 Q. 16. Seven or eight?
A. I can't tell you, I never taken any note of it.
Q. 17. Has it been dying ten years?
A. It may have been; I haven't taken any note of it.
Q. 18. Wasn't the timber dying in there long before any smoke ever came in there?
A. I suppose some died.
Q. 19. Don't you know that it has?
A. I won't say that there was or there wasn't.
Q. 20. Haven't you known of timber dying all over there ever since you were a boy?
A. Yes sir.
Q. 21. When was the first smoke that you noticed in there this year?
A. I have noticed smoke in there all along during the Spring.
Q. 22. What months?
A. The first I noticed was along in May, and then in June; about the 22nd of June it was down in there on my tomatoes and potatoes.
Q. 23. On the 22nd of June?
A. Somewhere along there.
Q. 24. Didn't you see some on the 23rd day of June?
A. I have seen it, I suppose, but I never taken note of what time it was.
Q. 25. Didn't you see some on the 24th day of June?
A. I can't tell you.
Q. 26. Didn't you see some on the 25th day of June?
A. I can't tell you; I can't tell you the dates.
Q. 27. Don't you know that there wasn't a week in June that you didn't see smoke?
A. There was lots in there; it was worse some days than it was others.
Q. 28. Will you testify positively that there was a single week that there wasn't smoke in there?
A. I don't know; I never paid any attention.
Q. 29. You saw it nearly every day, didn't you?
A. I saw it when the smoke was down in there; I never taken any dates.
Q. 30. Wasn't that nearly every day in June?
A. It might have been every days; I can't say.

Q. 31. What is your best judgment—did you see it every day or not?

255 A. I can't tell you.

Q. 32. What is your best judgment about every day?

A. I can't say sir.

Q. 33. Are you or not positive that it was in there at least every other day in June?

A. 33. No, I wouldn't be positive that there was.

Q. 34. Have you known it to skip as many as three days?

A. Yes sir, I have seen it there in the morning, and then it would all be blown back away from there.

Q. 35. I am talking about June, when the wind set from the North?

A. I can't say about that.

Q. 36. Take the 23rd and 24th of June, how much smoke was there in there those days.

A. I can't tell you.

Q. 37. Give your best judgment?

A. I can't tell you, for I don't know.

Q. 38. How many days do you think that it was in there?

A. It's just as I said; I have no recollection about it; I didn't take any dates; it might have been every day and then it might not have been so much.

Q. 39. Give your best judgment about it, I am not asking you to guess at it, or that it might have been.

Mr. DRAKE: We submit that he has answered the question, when he stated that he has no recollection on the subject. Overruled. Appeal prayed and granted.

A. I don't know; I didn't have no interest in it one way or the other.

Q. 40. If you had no interest then, why afterwards?

A. I haven't.

Q. 41. Didn't you have as much interest as you did on the 3rd day of July?

A. I never taken no notice about it; I told you that I taken notice of that day because we went to town on that day.

Q. 42. It was there on the second day of July wasn't is?

A. I suppose that it was.

Q. 43. It was there on the first day of July?

A. I can't say about that.

Q. 44. It was there on the 30th day of June wasn't it?

A. I think that it was.

Q. 45. On the 29th day of June?

A. I can't tell you; as I told you a while ago, I didn't take any dates or any particular notice.

256 Q. 46. You think that it was there on the 30th day of June?

A. I suppose so.

Q. 47. You said that it was there on the 30th of June, now was it there on that date?

A. I can't tell you, I wouldn't be positive about that.

Q. 48. Who got you to come here to testify?
A. Wasn't nobody; I got a subpœna day before yesterday; I don't know who sent it.
Q. 49. Who have you talked with?
A. I haven't talked with a living soul; I haven't talked with anybody since I come here.
Q. 50. Who have you talked with about testifying in this case?
A. I have talked with that gentleman there (Mr. Hill) and with another fellow, Mr. Drake.
Q. 51. What day of the week was it that you went to Copperhill?
A. On Friday.
Q. 52. What did you notice up there; did you see the smoke?
A. Yes sir; I see'd it and smelt it too.
Q. 53. What did it look like?
A. It looked like smoke to me. I can't tell you what it looked like; it looked kinder blue.
Q. 54. Didn't it look exactly like a fog?
A. No sir.
Q. 55. You do have fogs in the mountains, don't you?
A. Yes sir, but it don't smell like this smoke.
Q. 56. You have seen many a fog on those mountains that looked exactly like that smoke, haven't you?
A. I don't know that I have.
Q. 57. Don't you know that the appearance of that smoke is exactly like a mountain fog?
A. There is very little difference as I can tell.
Q. 58. There had been a dry spell over this country up to the third of July,—didn't it rain on the 3rd of July?
A. No sir, not on the 3rd; it rained on the fourth.
Q. 59. It didn't rain at all on the 3rd?
A. Not where I was, no sir.
Q. 60. Where were you during that whole day?
A. I was at home until twelve o'clock; the rest of the day I was between home and Copper Hill.
Q. 61. Who went with you?
A. Mr. John Turner.
257 Q. 62. Who is he?
A. He is a man that lives on the Chastain place, by the name of John Turner.
Q. 63. Who told you to go to Copperhill?
A. I told myself. I hired him to go down there with me after some cans.
Q. 64. Hired him to go?
A. Yes sir.
Q. 65. How many cans did you get?
A. Ten dozen.
Q. 66. Carry them back on the horse?
A. No sir, we carried them back in the wagon.
Q. 67. What time did you get back?
A. We got back between eleven and twelve o'clock on the fourth.
Q. 68. You didn't notice much smoke in there that day, did you?

A. The fourth?
Q. 69. The third?
A. It was the third that I noticed it being in there so much.
Q. 70. What do you mean by so much?
A. That is being so much smoke.
Q. 71. How long did it stay?
A. Pretty much all day. It was in there when I left home, and down all the way from home to Copperhill.
Q. 72. The whole distance along?
A. It was along on the mountains; I don't know that it was down along where we was traveling, but it was showing up on the mountains.
Q. 73. You mean that you could see the smoke on the mountains?
A. Yes sir, all around until we got to the top of the hill.
Q. 74. Do you know what that came from?
A. It came from the Isabella plant.
Q. 75. How do you know?
A. I see'd it coming from there from the top of the hill.
Q. 76. Do you know what kind of smoke it was?
A. No sir.
Q. 77. Didn't it come from the power plant?
A. I can't tell you; it come from out about the furnace: I can't tell you what it comes from.
Q. 78. You don't know whether it came from the power plant or not?
A. I don't know, for I wasn't over there.
Q. —. Were you close to the Isabella Furnace?
A. I was. I was within three or four miles.
258 Q. 79. You didn't notice any smoke at your place on the 8th and 9th of June?
A. I can't tell you about that.
Q. 80. There wasn't anything hurt on your place on the 8th and 9th of June?
A. I can't tell you when it was hurt; I haven't had any thing hurt except potatoes, peas and beans, and I can't tell you what done it, but it looked like that smoke.
Q. 81. Potatoes, beans and tomatoes?
A. Yes sir.
Q. 82. How many peas did you have?
A. I have got out about three acres, I reckon, in the corn.
Q. 83. You think that was hurt along in May?
A. No sir, along in June.
Q. 84. Do you think it was hurt about the 8th and 9th of June, somewhere along there?
A. No sir, I can't tell you, but it was some time in June.
Q. 85. You think your tomatoes were hurt along about the same time?
A. Yes sir.
Q. 86. And your potatoes were hurt along about the same time?

A. Yes sir, about that time. I don't know that anything of mine was hurt on the 3rd of July; I never noticed.

Q. 87. Before that there had been some little scorching along back in June?

A. Yes sir.

Q. 88. I believe you said, Mr. Smith, that you had worked over at Ducktown?

A. Yes sir.

Q. 89. When did you work there?

A. It has been six or seven years. I haven't worked over there since they built the acid plant.

Q. 90. Which plant did you work for?

A. I worked for the Ducktown Company, but I haven't worked there since they started the acid plant.

Q. 91. You do know, don't you that after that high stack was constructed by the Tennessee Copper Company that the smoke came over in your section of the country?

A. It come more than it had been coming, and it done more damage it seemed like.

Q. 92. Have you been here in Blue Ridge when every tree
259 around here was scorched before that acid plant was put in?

A. Yes sir.

Q. 93. In 1906, 1908 and possibly, 1909, isn't it true that right around Blue Ridge here the trees were all scorched?

A. Yes, sir; I have seen them scorched all around over the creek and on back of the river, and beyond the river from my place.

Q. 94. What years was that?

A. I can't tell you, but it was after the high stack went up.

Q. 95. And before the acid plants were installed?

A. Yes, sir.

Q. 96. That was about the time you were working there wasn't it?

A. The timber has been burned in there since then.

Q. 97. I am not talking about that, I am talking about when it was badly burned before these acid plants was put in?

A. I can't tell you.

Q. 98. Don't you know that these acid plants went into operation along about 1909 or 1910?

A. Somewhere along there; I can't give the dates.

Q. 99. Don't you know that since that time, there has been comparatively little scorching through the Blue Ridge?

A. The timber has not been burned altogether as bad as it was back of that.

Q. 100. Don't you know that through the whole Blue Ridge down here from where you came, that there has been but very little scorching as compared with what it was for five or six years before that?

A. It has not been so bad.

Q. 101. It hasn't been near so bad, has it?

A. I can't tell you how bad it has been, but I have seen but very little damage on anything except tomatoes and beans and such like.

Q. 102. During the present year?
A. Yes, sir.
Q. 103. The same way during last year?
A. Yes, sir.
Q. 104. Wasn't it the same way in 1912?
A. I think it was; I had tomatoes and potatoes and lost them.
Q. 105. That in 1912?
A. For three and four years back I haven't had any luck with potatoes.
Q. 106. You haven't noticed any substantial damage to the forests?
260 A. I haven't on our place, or anywhere else; I haven't paid any attention to it.
Q. 107. You have been to Blue Ridge a number of times the last six or eight years?
A. Yes, sir.
Q. 108. You come a few times every year?
A. Yes, sir.
Q. 109. Been around Morgantown?
A. Yes, sir.
Q. 110. You have been up around Mineral Bluff, haven't you during these years?
A. Yes, sir.
Q. 111. And on the mountains?
A. Yes, sir.
Q. 112. You travel these sections between where you live and the copper plants every year?
A. Yes, sir, more or less.
Q. 113. You peddle your produce at Copperhill?
A. No, sir.
Q. 114. You don't produce anything to sell?
A. I have never taken any to Copperhill. I generally sell what I have to sell at Mineral Bluff.

Mileage of witness: 12 miles.

D. M. BUCHANNAN, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. How old are you Mr. Buchannan?
A. Forty-eight.
Q. 2. Where do you live?
A. I live a mile and a half East of here.
Q. 3. Of Blue Ridge?
A. Yes, sir.
Q. 4. On what creek or near what creek do you live?
A. Right near what they call Weaver Creek.
Q. 5. How far do you live from Mr. John Miller who was on the witness stand a while ago?
A. 'Bout a mile and a half.
Q. 6. In what direction do you live from Mr. Miller?

A. Mile and a half Southwest.

Q. 7. Have you seen any sulphur smoke in your neighborhood this year?

A. Yes, sir.

Q. 8. Did you take any dates when you saw it in there the worst?

261 A. Yes, sir, I taken three dates the worst I saw.

Q. 9. What dates were those?

A. The first and eighth and thirteenth of June.

Q. 10. Of this year?

A. Yes, sir.

Q. 11. What did you put it on?

A. I put it down on the calendar.

Q. 12. Have you that calendar with you?

A. No, sir, it's at home.

Q. 13. Could you see the smoke on these dates?

A. Yes, sir.

Q. 14. Could you smell it?

A. Yes, sir.

Q. 15. How did it smell?

A. It smelled like sulphur smoke.

Q. 16. You ever been over about the plants?

A. Yes, sir.

Q. 17. Did you smell the smoke around them?

A. Yes, sir.

Q. 18. How did it compare with the smoke you smelt around there?

A. It had the same smell.

Q. 19. What effect did that smoke have on the timber in your country?

A. I have seen some timber that has been bit by something.

Q. 29. Is there any dead timber in that country?

A. Yes, sir, a right smart of dead timber in places.

Q. 30. You said that you had seen the timber bit, when did you see that?

A. Along in June. I noticed the dead leaves; they seemed to be crimped up.

Q. 31. You are a farmer?

A. Yes, sir.

Q. 32. What varieties of crops do you raise?

A. Corn and potatoes, and some garden truck.

Q. 33. Have you ever seen any smoke in your garden truck and afterwards observed any changes in it; if so, what?

A. I think that my potatoes, garden beans and tomatoes have been injured by something.

Q. 34. That this year?

A. Yes, sir.

Q. 35. When did you see smoke in there?

A. All along last May and on up in June.

Q. 36. Did you see any in July and August?

A. Yes, sir; the second and third days of July was pretty bad smoke.

262 Q. 37. How long has this smoke been coming in on you there?

A. I don't recollect, I guess five or six years.

Q. 38. How long have you lived there?

A. Seventeen years; I was raised right here.

Q. 39. Are you a land owner?

A. Yes, sir.

Q. 40. How much land do you own?

A. Eighty acres.

Q. 41. Did you see any smoke in there last year and year before last?

A. Yes, sir.

Q. 42. How has it been all along for the last few years?

A. It has been pretty bad for the last three or four years or maybe longer; I don't remember.

Q. 43. How has it effected your gardens and your crops?

A. It has hurt my vegetables and garden stuff; I haven't seen so much difference in the last three or four years. My corn crop is not hurt as bad this year as it has been.

Q. 44. How about last year?

A. I don't think my crop was hurt as bad as it has been by the smoke.

Q. 45. Have you any particular crops that have been damaged by the smoke?

A. Yes, sir, my potatoes and my garden truck, and my orchard.

Q. 46. How much orchard have you got?

A. Something like 250 or three hundred trees.

Q. 47. How does it effect your orchard?

A. The fruit trees all sheds their leaves, and a heap of them turn brown, and the fruit is small and no good.

Cross-examination by General FOWLER:

Q. 1. How long have you lived there?

A. Seventeen years.

Q. 2. You own the place?

A. Yes, sir.

Q. 4. Up on the mountains?

A. No, sir, right at the end of the mountain.

Q. 5. What kind of soil is it?

A. My land is mostly red clay.

Q. 6. How long has it been cleared?

263 A. Right where I live, it has been cleared for 50 years.

Q. 7. Good deal of it is pretty well worn?

A. It has been tended a long time.

Q. 8. Naturally you can't make as good crops as you used to?

A. No, sir, you can't make as good crops as you could when it was fresh; about the only way to make a crop is to fertilize it well.

Q. 9. Have to have fertilizer to make much of a crop anyway?

A. Yes, sir, you have to do that to make any crop much. Might be some patches, you wouldn't.

Q. 10. When you have a dry spell that hurts the corn?

A. Yes, sir.

Q. 11. High corn dries quickly.

A. Yes, sir. I have some branch bottom corn.

Q. 12. I believe you said that this year it didn't hurt your corn so badly?

A. No, sir, I don't think it hurt my corn.

Q. 13. You had right smart of a drouth in June didn't you?

A. Yes, sir.

Q. 14. Along in May and in June?

A. Yes, sir, last May and on up in June.

Q. 15. Didn't that hurt your corn?

A. Yes, sir, it hurt it some; garden stuff has got to have rain.

Q. 16. Wasn't it about six weeks through here, the whole section that it was perfectly dry?

A. No, sir, we had some few showers; we ain't had no good season.

Q. 17. That extended over a period of five or six weeks?

A. Yes, sir, about five or six weeks we didn't have much rain.

Q. 18. Wasn't there a good deal of complaint through the neighborhood about the drouth?

A. Yes, sir, several complained about their gardens dying.

Q. 19. That drouth was broken up by a rain on the 4th of July, wasn't it?

A. I don't remember when it first rained.

Q. 20. Wasn't it right along about the first part of July?

A. Yes, sir.

Q. 21. Do you remember what kind of a day the fourth of July was?

264 A. Yes, sir, I think I do.

Q. 22. Was it a rainy day, or was it a pretty day?

A. It rained some.

Q. 23. Wouldn't the drouth cause the leaves of potatoes to crimp up?

A. I suppose that it would; it wouldn't like it would if they had rain.

Q. 24. You have seen that cause the potato vines to dry up and crimp up?

A. Yes, sir, I have seen the vines dry out.

Q. 25. As a matter of fact, if Irish potatoes don't get plenty of rain, they die?

A. They wouldn't make a good crop like they would if they had plenty of rain.

Q. 26. You have known potato crops to fail entirely for lack of rain?

A. Yes, sir, I have knowed that.

Q. 27. You have also known the potato bugs to kill them?

A. Yes, sir, I have seen potato bugs do it; seen them eat up a patch, but I was never bothered with potato bugs myself.

Q. 28. During the present year, your garden was damaged to some extent?

A. Yes, sir, I think along in June or the last of May.

Q. 29. I believe you said that the smoke was in there on the first, eighth and thirteenth of June?

A. Yes, sir, thems the only dates I kept down, that I saw it about my house.

Q. 30. You think that it does scorch your vegetables?

A. Yes, sir, I think that it done some damage in there. We have smoke in there all along; nearly every day we have some.

Q. 31. That was during that dry spell?

A. Yes, sir, it was pretty dry then.

Q. 32. Did you ever work at the furnaces?

A. No, sir.

Q. 33. You have been there?

A. Yes, sir, several times.

Q. 34. Sold produce there?

A. No, sir.

Q. 35. Where do you sell your produce?

A. I don't sell any. I ain't making enough to do me.

Q. 36. Don't you work out anywhere?

A. No, sir; I just farm; that's all I do.

Q. 38. How much do you own there?

A. Eighty acres.

265 Q. 39. You have been living at that place how many years?

A. Seventeen years.

Q. 40. You think that it has been five or six years ago before you noticed any smoke at all?

A. I can't tell you how long it has been.

Q. 41. Do you remember when the Tennessee Company built that high stack?

A. I don't recollect the dates.

Q. 42. It was after the construction of that high stack that you noticed the smoke, wasn't it?

A. I don't recollect that I noticed any damage or anything before that.

Q. 43. That was in 1906 or 1907, or do you remember?

A. I don't remember the dates.

Q. 44. After that high stack was constructed, for two or three years, didn't you notice around in Blue Ridge and where you lived, and practically all over this whole section in here, that the leaves were browned?

A. I have seen the leaves fall off the trees here and yonder.

Q. 45. Haven't you seen it here in Blue Ridge?

A. I have seen it in patches here and yonder.

Q. 46. Badly burned?

A. Yes, sir, and then you couldn't discover so much in other places.

Q. 47. It was very much worse than it is now?

A. It seemed to be bad on the timber; I know that I noticed the leaves falling off pretty bad.

Q. 48. Do you know when those acid plants were put in?

A. No, sir.

Q. 49. Do you remember the time when the acid plants were put in?

A. Yes, sir.

Q. 50. Since that time it has not been so bad, has it?

A. I haven't seen it so bad on the timber, but on the vegetables, it is about as bad.

Q. 51. Isn't there something else the matter with your potatoes?

A. There is something or other; I don't put it all on the smoke.

Q. 52. You raised them all right up to three or four years ago?

A. Yes, sir.

Q. 53. For the last three or four years, you haven't?

A. Might have been longer than that.

266 Q. 54. Five or six year-?

A. Might have been five or six years.

Q. 55. What the trouble really is, you can't tell?

A. I don't know that it is the smoke altogether; I can't say about that; I know that my garden and potato patches don't do as well as they did.

Redirect examination by Mr. DRAKE:

Q. 1. You have been asked about the drouth and the effect of it on your garden truck and farm stuff, I will ask you whether or—a drouth could come down in there and stay two or three hours; settle down on your garden and crisp up the leaves like frost bite?

A. No, sir.

Q. 2. You never saw it do anything like that?

A. No, sir.

Q. 3. I will ask you if this isn't a very fine country for good seasons and plenty of rain?

A. Yes, sir; generally we ain't had no drouth to hurt for the last several years.

Mileage of witness: Three miles.

J. M. CARTER, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. How old are you?

A. Fifty-six.

Q. 2. Where do you live?

A. I live in a mile and a half of Morgantown.

Q. 3. Which direction from Morgantown?

A. Northeast. I live adjoining the land of J. C. Addington.

Q. 4. How long have you lived at your present place?

A. About nineteen years. Four years I lived in Morgantown, but I still owned the place.

Q. 5. How long have you lived in Fannin County?
A. Twenty some odd years.
Q. 6. What is your occupation?
A. Farming and teaching.
Q. 7. School teacher, you say?
A. Yes, sir.
Q. 8. How much land do you own up there?
A. Two hundred and seventy acres.
Q. 9. How much is cleared and in cultivation, and how much in timber, about how much.
267 A. *10.* I have got about seventy acres in cultivation.
Q. 11. What varieties of crops you raise and attempt to raise on your farm?
A. Wheat, rye, oats, corn, potatoes and fruits.
Q. 12. Are you acquainted with the timbers in this section, and the varieties?
A. Yes sir.
Q. 13. In your nineteen years of living over at Morgantown and speaking for the last five or six years, have you observed any sulphur smoke in your community?
A. Yes sir.
Q. 14. Did you see it in there in 1913, and if so, to what extent.
A. Yes sir, it was pretty heavy on us part of the time over there.
Q. 15. If you have had any crops injured, what kind of crops and how much of it?
A. We had about forty-four acres in cultivation last year in corn, potatoes, etc. and oats.
Q. 16. Did you have them oats put in good condition or not?
A. Yes sir, in fairly good condition.
Q. 17. What kind of crop did you make?
A. I got nine little shocks.
Q. 18. How many bushels did them nine shocks make?
A. Three or four bushels.
Q. 19. How many bushels ought you to have made off of them oats, off that land, the way the land was prepared, and all, if it hadn't been bothered any?
A. I think that the season we had last year if them oats hadn't been damaged any, I think that I ought to have made 150 bushels of oats. I have *a* had oats on this land before the smoke effected us, and I have had fine oats.
Q. —. How high did it grow?
A. About shoulder high.
Q. 21. How did it do then?
A. I had been away and came home, and after I came up I said to the boys——
Q. —. Just tell what you did?
A. I saw that the oats looked reasonably well out there, and I said we ought to have enough oats on the land——
Q. 23. Just tell what you saw?

A. Well, sir, the smoke come in there, and a little later
268 I went out into the oats and I saw that there wasn't no oats on the land to amount to anything; I found the plant lying on the ground dead, burned brown and dead, and there wasn't any oats left there to make anything.

Q. 24. Had you seen any smoke in there previous to that?

A. The smoke was in there when I come home on the 23rd of May, and it was a little later that I discovered that it was dying.

Q. 25. When you saw that smoke in there, state whether or not you smelled it?

A. Yes sir.

Q. 26. Did you observe any smoke in *on* your garden truck?

A. Yes sir.

Q. 27. What effect did it have on that?

A. It injured our beans, cabbage and our potatoes. We had a very fine irish potato patch; we cultivated *it* that very nicely and fertilized it, and we didn't get any potatoes at all off of it.

Q. 28. What were the visible effects of the tops of the potatoes?

A. *29.* The first I saw was that the leaves begun to crisp up around the edges and turn black and then from that they turned yellow, and drop off, and leave the stem standing.

Q. 29. Was that caused by bugs?

A. The- was no bugs.

Q. 30. You saw the smoke in there and smelt it?

A. Yes sir.

Q. 31. Did you have any corn crop?

A. Yes sir, I had one field of about thirteen acres, and one of five. Fourteen or fifteen acres.

Q. 32. Was that or not on specially prepared ground and on extra good land?

A. We had one piece of five acres in the piece; we estimated that pretty closely, and by that we could tell what was in the piece. I guess about four acres in that piece and on that we put 28 wagon loads of manure and 1,300 pounds of fertilizer. We got 100 bushels of courn off of that and we prepared it for 50 bushels to the acre.

Q. 33. What effect did the smoke have on that corn?

A. When that smoke come in there, I saw the corn turn white,
269 and I went and examined the roots; thought may be worms had got into it, but I couldn't find anything at all wrong with the roots. The tops of the blades turned white, and begun to die. We went on into it and some of it looked a little better, and we decided that maybe it would grow out, and we would wait until the next week; then we went back, and dug up about 100 of the stalks and replanted it. Practically the entire five acres had to be replanted.

Q. 34. What percent of that first pla-ting was killed—I mean by these fumes?

A. I think at least 60% of it was killed.

Q. 35. That that it didn't kill and left standing, did that make good corn?

A. It never did; it made a tolerable fair stalk, but it didn't never

make any ears to amount to anything; the replant that was not injured by the smoke made a pretty fair ear, but it didn't mature.

Q. 36. That cut off by frost?

A. Yes sir.

Q. 37. Any other of your garden truck hurt by the smoke, I believe you spoke of the irish potatoes?

A. Yes sir, our beans were scorched up and turned white and were injured, and our cornfield beans and garden beans and peas didn't raise at all.

Q. 38. Why?

A. Because the smoke ruins them every year.

Q. 39. The forest timber, did you observe any smoke in that? if so what was the effect?

A. I noticed that every year the forest is effected by the smoke; the leaves brown up, and they have this year. I could have brought specimens showing the effect on the foliage.

Q. 40. Has any of the timber been killed?

A. Yes sir, a great deal of the timber on my place is dead and dying.

Q. 41. Do you see those burnt leaves every year?

A. Yes sir.

Q. 42. When the smoke is in there you see it?

A. Yes sir. I don't think it's over ten miles from my place to the plants, air course.

Q. 43. How about this year, have you seen any smoke in there this year?

A. Yes sir, it has been in there pretty heavy, this year.

Q. 44. Tell what it has injured this year in the way of
270 garden truck, farm crops and timber, if you have observed this?

A. Yes sir, this year it has effected the timber and growth of it, and the foliage, and as for corn in the Spring, part of it first come up. One acre my boy planted for a prize acre, and that was badly damaged, and we had to go and replant like we did last year on account of the smoke killing it. The corn that was damaged was that which came up first and was young and tender.

Q. 45. Have you observed the manner in which it kills the corn, and whether or not that is similar to frost?

A. Yes sir, I have observed it. The smoke will kill one stalk in a hill and leave the other, and you will find the same to be true about frost; frost will kill one stalk in the hill and leave the other.

Q. 46. Do you know why that is true?

A. No sir, I do not.

Q. 47. What else did it hurt this year?

A. It hurt our potatoes, and it hurt my fruit trees.

Q. 47. How does it effect the fruit trees?

A. The first I noticed it in there, it would turn the leaf a little brown like, and the leaves begin to cup up around the edges, and turn white, later brown and then yellow and they drop off, and the apples, a large percent of them drop off; some of them drop off from worms but all of them on the ground are not worm apples.

Q. 48. If you haven't described the conditions of the forest this year, please do so?

A. I have brought some samples showing the effect on the foliage this year.

Q. 49. Tell how it is?

A. It scorches the leaves and they turn brown and then yellow, a great many of them.

Q. 50. Have you observed what kinds of the forest trees it effects the worst?

A. I don't know that I could say positively about that which it effects the worst. The hickory is practically gone from our place.

Q. 51. What killed it?

A. I can't see anything else except this smoke. It was there a few years ago, and now it's gone.

271 Q. 52. Have you traveled over these forests?

A. In that community, I have.

Q. 53. I will ask you if the hickory in that community is not practically gone?

A. Yes sir, it is practically gone.

Q. 53. State whether or not that used to be a fine county for hickory?

A. There used to be a great deal of hickory in the county, there isn't now.

It is agreed by and between counsel for the State and the defendant, that the witness lives 13½ miles from Copperhill, and 15½ miles from Isabella, in a Southeast direction.

Cross-examination by General FOWLER:

Q. 1. Did I understand you to say that the smoke killed that corn, that prize corn last year?

A. Yes sir.

Q. 2. And you replanted it, and the frost killed the replant before it matured?

A. Yes sir.

Q. 3. How long have you lived at that place?

A. Since I moved there about nineteen years ago. I owned the farm all the while, but four years I lived in Morgantown, but operated the farm just the same.

Q. 4. You go very frequently to Copperhill and Isabella?

A. I have been there a few times, yes sir. I was there this summer. I hadn't been there in two years until this summer.

Q. 5. Crops were injured pretty badly in 1913?

A. Yes sir.

Q. 6. That is the year, you try to, raise that prize corn?

A. Yes sir.

Q. 7. That is the year that your neighbor *made a* produced the prize acre of corn in the whole state of Georgia, isn't it?

A. Yes sir, I was in his corn.

Q. 8. Did you ever see as fine corn as that grown anywhere?

A. No sir, I don't know that I ever did.

Q. 9. How near was that to you?

A. On adjoining land; from my home it is about a mile or a little over.

272 Q. 10. He had a mighty good irish potato patch, didn't he?

A. Yes sir, he had a fine irish potato patch, but I would say that the whole crop was injured by the smoke; I was in there a number of times, and I think if it had not been injured, it would have produced more.

Q. 11. Do you suppose that his competitors, the South Georgia crops, were injured by the smoke?

A. I don't know about that.

Mr. DRAKE: We except to that because not irrelevant; and because South Georgia not being upland was not competing with us. Exception overruled. Appeal prayed and granted

Q. 12. Is there any upland in South Georgia at all, no hills?

A. You will find some places that they call hills; we don't call them hills.

Q. 13. Over how great a territory in this State did that contest extend?

A. I don't know; over the State, I suppose.

Q. 14. Did you put in any claim for damages last year?

A. Yes sir.

Q. 15. How much did you get?

A. I got $30.00.

Q. 16. Have you put in any claim this year?

A. No sir.

Q. 17. Are you going to file one?

A. No sir, the requirements are too close. They want me to file my claim fifteen days after the smoke comes in on us and I can't tell what the damage is or would be in fifteen days.

Q. 18. Isn't it a fact that the arbitrators, that is the parties on that board of award go and examine the property?

A. All I can say that I was not at home. They went down, two of them went to my place after the crop was gathered and went and talked with my wife, but they couldn't tell anything about it.

Q. 19. But now, during the present year, aren't they going around at the present time?

A. I don't know anything about it.

Q. 20. To ascertain what the damages are?

A. I don't know.

Mr. DRAKE: I except to the evidence as being irrelevant. Exception overruled. Appeal prayed and granted.

273 Q. 21. You were speaking about the rules, the present rules how do you know that is the rule?

A. I see it in the papers, is all I know.

Q. 22. Didn't they also state that they would be around after the application was filed?

A. I don't know anything about that.

Mr. DRAKE: I further except to it as hearsay. Exception overruled. Appeal prayed and granted.

Q. 23. Did your claim include damages for all the previous years?
A. No sir, just for the year they was in.
Q. 24. Was there any smoke in there in 1912?
A. Yes sir.
Q. 25. During what part of the year?
A. During different parts of the year.
Q. 26. Was it as bad as it was in 1913?
A. I can't say positively; similar to it.
Q. 27. Did you have smoke in 1911?
A. Yes sir, we have smoke every year.
Q. 28. In 1910?
A. Yes sir.
Q. 29. In 1909?
A. Yes sir. It has been in there ever since they have been running the mines, more or less.
Q. 30. Those mines have been running for fifty or sixty years, haven't they?
A. I can't say; they have since I have been in there.
Q. 31. When did you first notice damage there on your place?
A. I can't tell exactly what year it was, but a number of years ago.
Q. 32. Six years?
A. Yes sir.
Q. 33. Seven years?
A. Yes sir.
Q. 34. Eight years?
A. I think, six, seven or eight years.
Q. 35. 1906, 1907 and 1908, that what you mean?
A. Yes sir, I think that was the years.
Q. 36. Anyway it was after that high stack was put up by the Tennessee Copper Company, wasn't it?
A. I don't remember about how soon after that, but it was after that.
Q. 37. Do you remember when that high stack was put up?
274 A. I don't know how many years it has been.
Q. 38. Don't you know that your troubles began after that high stack went up?
A. I can't tell you what year it went up? I don't know but it has been a number of years.
Q. 40. During these years that you have mentioned, 1906, 1907 and 1908, wasn't your country worst effected?
A. Yes sir.
Q. 41. You don't see anything like that now?
A. No sir, not quite so heavy.
Q. 42. Nothing like as heavy?
A. No, it is not as heavy.
Q. 43. Now you notice over there some patches of brown?
A. I can find it whenever I go into the forest.

Q. 44. When you go through the forest now, now and then you see some brown, isn't that true?

A. Yes sir; it's not as heavy as it has been.

Q. 45. Not near so heavy?

A. No sir; I said, not as heavy.

Q. 46. Really, there is no comparison between conditions now and in 1906, 1907 and 1908?

A. I can't say "no comparison"; I say that it is not as great.

Q. 47. In these years you have mentioned, haven't you seen the whole foliage right here in Blue Ridge burned?

A. Yes sir.

Q. 48. During those seasons?

A. Yes sir, and I saw it at home that way too.

Q. 49. The forests down there were in that condition?

A. Yes sir.

Q. 50. You don't see it that way now, do you?

A. Not so heavily.

Q. 51. That is, in going through the woods you can now and then pick out a tree that has burned leaves on it?

A. You can pick them out; they are scattered all through the woods, but not as heavy as they were six, seven and eight years ago; on the foliage of the timber you will find where it is specked and burned.

Q. 52. You don't find much leaves falling during the summer season, do you?

A. No, not many leaves falling.

275 Q. 53. Do you know when these acid plants went into effect?

A. Practically; I don't know the dates.

Q. 54. Don't you know that ever since then conditions have been better?

A. Out in my country it still hurts.

Q. 55. Conditions are not near so bad, are they?

A. No- so bad, of course.

Q. 56. Isn't it a fact that you are trying to attribute to these furnaces every bit of damage that you see to the forests all over this country?

A. No sir; I tell you what I do; I find the very same thing nearer the mines, and of course at home I find the same thing that I see nearer to the mines; that is why I think that it is the smoke.

Q. 57. Do you see dead trees through the woods there at your place?

A. Yes sir.

Q. 58. Do you know what killed them?

A. I don't say I know; but I attribute it to the smoke largely.

Q. 59. Don't you attribute the death of every dead tree you see to that smoke?

A. No sir, and I never did.

Q. 60. Have you any chestnuts over there?

A. No sir, they have all been dead for several years; I never did have many chestnut trees on my place.

Q. 61. I believe you say that the hickories are in bad condition?
A. Yes sir, they are practically gone.
Q. 62. Don't you know that both the hickories and chestnuts have been dying throughout the Southern mountains for a number of years?
A. I haven't been over the mountains.
Q. 63. If the chestnuts are dying elsewhere in larger quantities than in your section, you can't account for that?
A. I don't know anything about that; I haven't been in other sections.
Q. 64. You know absolutely nothing about the diseases of trees?
A. I don't know like a man that has studied it more thoroughly than I have.
Q. 65. Do you know the effects and causes which produce the death of trees?
A. Worms sometimes destroy the timber, and other dis-
276 eases I suppose kills the timber.
Q. 66. You do know that the fung-us disease effects the roots of the trees and destroys them?
A. No sir, I don't know that.
Q. 67. You don't really know that there is such a disease?
A. No sir, except in fruit trees; I have found that it effects fruit trees.
Q. 68. Do you know the scale in fruit trees?
A. Yes sir.
Q. 69. Did you ever see it?
A. Yes sir.
Q. 70. How much of it is in your orchard?
A. I haven't any.
Q. 71. How do you know?
A. I have investigated it.
Q. 72. Do you know enough about the scale to give that opinion?
A. Yes sir, I think so. I have been into orchards where it was, and knew that it was the scale.
Q. 73. Where did you read up on the scale?
A. I have studied fruit trees some ten or twelve years? I have studied some.
Q. 75. How many trees have you?
A. About a thousand.
Q. 76. How old are they?
A. Nine and ten years old.
Q. 77. Have you ever gotten any fruit from them?
A. I have.
Q. 78. Get a good crop?
A. No sir, not what I would call a good crop.
Q. 89. What varieties are they?
A. They are winter fruit?
Q. 90. Do they bloom early?
A. Not any earlier than the others.
Q. 91. Don't you know that late apples bloom earlier than any other apples?

A. They bloom practically the same as other apples.

Q. 92. Don't you know that the early apple blooms late and the late apple blooms very much earlier?

A. There is not much difference that I have ever noticed.

Q. 93. Don't you know that the late apples were killed by the frost?

A. It does if frost comes late enough for it.

Q. 94. You do have late frosts in your section?

A. Sometimes all of our fruit is killed by the frost.

Q. 95. During the present year, you had a late Spring didn't you, and as a matter of fact didn't you have a cold season?

277 A. I wasn't here until the 26th of May.

Q. 96. Didn't you have a very late frost?

A. I don't know sir.

Q. 97. Don't you know, as a matter of fact that it killed a very large part of the fruit throughout the North Georgia region, in the mountains of Georgia, and destroyed the peach crops down in middle Georgia;

A. No sir, I don't know that; I was in South Georgia.

Q. 98. When were you in Ducktown last?

A. In July.

Q. 99. You testified about oats, I believe that you have quit raising oats?

A. Yes sir.

Q. 100. Did you ever raise many oats?

A. Yes sir.

Q. 101. Spring oats or winter oats?

A. Spring oats.

Q. 102. Did you ever sow any winter oats?

A. No sir, not in this country.

Q. 103. Don't you know that in the Southern countries in many sections, they can't raise Spring oats at all scarcely, and that they sow winter oats?

A. No sir, I know that you can't raise Spring oats.

Q. 104. Don't you know that these same conditions exist fifty and one hundred miles and two hundred miles away from here?

A. No sir. I know that they raise them in South Georgia.

Q. 105. Don't they raise winter oats through there?

A. I know that they sow oats through there.

Q. 106. Isn't this true, that there are new diseased attacking the fruit trees and the forest trees in every locality, just like new diseases attack man?

A. I suppose so, I don't know.

Q. 107. You don't know it to be a fact that there has been a disease for the last few years in the Appalachian region which has been attacking the chestnut trees?

A. No sir, I haven't heard it.

Q. 108. And killing them from the root?

A. No sir, I haven't been interested in chestnut timber.

Q. 109. Also that the pine and the hemlock has been dying all over the country?

A. No sir. There is none in our section. There is a little
278 along the river. I haven't give it no attention and I don't know anything about these sections.
Q. 110. How much did you claim last year?
A. One hundred and fifty six dollars and a few cents.
Q. 111. And the Board of Arbitrators allowed you $30.00.
A. Yes sir.

Redirect examination by Mr. DRAKE:

Q. 1. Isn't it true that the Board of Arbitrators only have so much money to divide out among the people?
A. I reckon that they do; that's all I got.
Q. 2. You were asked about Spring oats and winter oats, I will ask you whether or not before this smoke came in there you could or not raise very fine Spring oats?
A. Yes sir. Before that smoke come in I would get 150 and 175 bushels on the farm there, and was only running a one-horse crop.
Q. 3. Speaking about the conditions of the forest, all you know of last year is what you saw in your own neighborhood, I believe you stated?
A. Yes sir.
Q. 4. You haven't seen the section of the country South and Southwest of these plants in Fannin County?
A. No sir.
Q. 5. You live North and almost East, north a little from Blude Ridge?
A. Nearly East; a little bit to the North.
Q. 6. What direction from the Ducktown Copper Company and the Tennessee Copper Company?
A. We call it North East.
Q. 7. I believe you stated that it didn't effect all sections alike; only in spots?
A. Yes sir.

Recross-examination by General FOWLER:

Q. 1. Did you ever saw any winter oats at all?
A. I did when I lived in Union County; I haven't since I have been in Fannin County.
279 Q. 2. How long has that been?
A. Forty years.

Mileage of witness: 16 Miles.

W. M. BAILEY, being sworn to speak the truth, the whole truth and nothing but the truth, testified?

Direct examination by Mr. DRAKE:

Q. 1. How old are you Mr. Bailey?
A. Sixty years old.
Q. 2. Where do you live?

A. I live in Gilmer County.
Q. 3. At what point?
A. At what is called Board Town Creek.
Q. 4. How far from Blue Ridge and in what direction?
A. Six miles from Blue Ridge, in a kinder West direction from Blue Ridge.
Q. 5. What part of Board Town, near the headwaters?
A. No sir, my place is in the fork of the creek.
Q. 6. Near Burnett?
A. Yes sir.
Q. 7. How near to Burnett and what direction?
A. It is about half a mile South of Burnett, or three-quarters.

It is agreed by and bewtween counsel for the State and for the defendant, that the witness lives 12½ miles from Copperhill, and 15¼ miles from Isabella, in a direction a little West of South.

Q. 8. How long have you been living in that neighborhood on the present place?
A. Eight years.
Q. 9. How much land do you own in there in that community?
A. One hundred and Forty Acres.
Q. 10. Have you observed any sulphur smoke in that community in the last few years, and if so to what extent?
A. Yes sir.
Q. 11. What is the effect of that smoke when it comes in there?
A. It has an effect kinder like frost on the vegetables and oats and such like that, and peas. It burns the leaves.
Q. 12. After they turn what do they do then, the leaves?
280 A. They begin to dry up.
Q. 13. After they dry up do they hang or what do they do?
A. No sir, they fall off.
Q. 14. Have you seen anything like that this year; if so, when?
A. Yes sir, I remember that it come on the second day of June, and there were several there in the community said that it was the strongest——
Q. 15. Just tell what you know yourself?
A. It was the strongest I ever saw over there.
Q. 16. That this year?
A. Yes sir.
Q. 17. Did you observe any of the effects of that smoke after it was gone?
A. Yes sir.
Q. 18. What were they?
A. I have a large apple orchard; the apples begun to fall off.
Q. 19. What about the leaves?
A. They turned yellow, a kind of brown and then begun to shed off.
Q. 20. What else did you observe the effect on?
A. Beans and garden vegetables.
Q. 21. What did it do to them?
A. They dried up; turned white and dried up.

Q. 22. Did you smell that smoke?
A. Sure did, yes sir.
Q. 23. Did you observe the effect of it on your peas?
A. I did. It is worse on peas and oats and garden vegetables that is tender than on anything else.
Q. 24. Did you observe the effect of it on your oats?
A. I ain't growed any oats in six years; I can't raise them any more.
Q. 25. Did you use to grow them?
A. Yes sir, I growed as fine oats as anybody in the community.
Q. 26. Have you observed the effects of this smoke on your corn?
A. Yes sir.
Q. 27. What did it do to that?
A. When the corn is little it will turn it white like it has
281 been frost bit. A good deal of it did bloom again and seemed to revive and go on.
Q. 28. When it grows bigger, later on, when it is tasseling and silking, what will it do to it?
A. Say that the smoke comes in there today and then you go there tomorrow, the silks is dying up and drop off and the corn don't do no good.
Q. 29. Have you observed the effects on the forest timber?
A. Yes, sir.
Q. 30. What were those effects?
A. They turn brown, the leaves I think turn brown.
Q. 31. Did you observe any of that this year?
A. Yes, sir.
Q. 32. To what extent through the forest?
A. I don't believe that it has been as bad this season on the forest, drying up the leaves, as it has heretofore.
Q. 33. What varieties of trees does it effect?
A. The Spanish Oak and the Post Oak trees.
Q. 34. It effects them worse?
A. Yes, sir.
Q. 35. State whether or not it effects most of the varieties?
A. Certainly; it browns the leaves of all the timber more or less; some of the places where it comes through and hits it center on the side of the mountains, it browns the leaves on all of the timber.
Q. 36. Have you observed anything of that kind this year?
A. Yes, sir, back there West of where I live, there is a place up there where the ground is pretty well covered with the leaves that has fell off.
Q. 37. That is not the natural time of the year for the leaves to fall off?
A. No, sir.
Q. 38. Did you observe the effects of the smoke last year?
A. Yes, sir, it has been there every year for the last eight years.
Q. 39. How long have you been living in this county?
A. I was born and raised in this county.
Q. 40. Where did you live before you went to this particular place?

282 A. In this county?
Q. 41. At what point?
A. I lived kindly east of here.
Q. 42. How far?
A. Six miles, back on the Tocoa river.

Cross-examination by General FOWLER:

Q. 1. Were you over in there in 1906?
A. Yes, sir, I reckon so, I moved there in January.
Q. 2. Eight years ago last January?
A. Yes, sir.
Q. 3. It was pretty bad wasn't it, the first year you went there, in 1906?
A. I don't remember. We have been having it, more or less of it every year. I didn't keep no dates.
Q. 4. Don't you remember that in 1906, 1907 and 1908, the first three years you were over there, that it scorched the whole hillsides, and scorched the forest?
A. I suppose it did, yes, sir.
Q. 5. It was a great deal worse those years than it is now wasn't it?
A. Well, I don't know, I believe that last year there was portions of my section that it scorched pretty bad.
Q. 6. Haven't you been over the Blue Ridge?
A. Yes, sir.
Q. 7. Wasn't it scorched pretty badly then?
A. Yes, sir.
Q. 8. You don't see anything like that now, do you?
A. Some places you see the effects of it.
Q. 9. I know you do in some places, but at that time wasn't it much worse?
A. Yes, sir, it was pretty much everywhere.
Q. 10. Now, traveling the forest you just see a patch here and there?
A. Yes, sir, kinder in spots.
Q. 11. You can go for great stretches and not notice anything at all, except that you will find a patch here and there that is effected?
A. No, where I live there is a gap back up in there, and when it comes in through that gap it will settle down all over Bush Head Mountain.
Q. —. Those are the places that are effected?
A. Yes, sir, at this time. I notice on my place there the leaves are browned considerable.
283 Q. 13. I say you can go for big stretches of the country through the forests elsewhere and wouldn't notice it?
A. There is some places back in behind the mountains that it don't strike down.
Q. 14. Don't you know, Mr. Bailey, that there are vast stretches of forest in the mountains that you never notice it?

A. Well, I tell you, the people have kinder got used to it and don't pay much attention to it like they used to. I don't pay as much attention to it as I did. I might travel all over the country and not pay any attention to it.

Q. 15. You came to Blue Ridge this morning?

A. Yes, sir.

Q. 16. How far did you come?

A. Six miles.

Q. 17. You came through sections of the country and never noticed it at all?

A. I don't know whether I would notice it or not. I said there was more or less of it everywhere, and we don't notice it like we did when it first come in there.

Q. 18. That section of land in there is naturally poor isn't it?

A. We make a living on it.

Q. —. It is very poor land though isn't it?

A. We have got a good deal that is poor.

Q. 20. There is really very little fertile land in that whole section?

A. Of course there is not a great amount of land for cultivation in that community, but there is some good land.

Q. 21. How long has that land been cleared?

A. I don't know, for a number of years though.

Q. 22. The strength of that soil is largely exhausted isn't it?

A. Not altogether. The smoke has ruined it; that's the trouble.

Q. 23. It has ruined the soil?

A. Yes, sir.

Q. 24. It has ruined the very soil?

A. Yes, sir, it has injured the soil. We can clear off new ground and we can't make nothing on it without fertiliz- it.

Q. 25. Do you mean to say that you can clear up fresh land and that you have got to fertilize that?

284 A. Yes, sir, to get anything off of it.

Q. 26. So it will kill the fresh land?

A. It will kill the soil.

Q. 27. You don't know how that is done, though, the trees are alive and standing there aren't they?

A. A good deal of the trees is down.

Q. 28. I say, still standing there?

A. Yes, sir, and a heap of them is down.

Q. 29. Some dead and some living?

A. Yes, sir.

Q. 30. And when you cut them off, then you have got to fertilize that soil?

A. That's right, sir; that's exactly what I said.

Q. 31. And that is on account of the smoke?

A. I can't say that it is altogether on account of the smoke. Maybe poor land might have something to do with it. The most expert farmers in our county claims that it is ruined by it.

Q. 32. That is incompetent evidence, and you knew it very well, didn't you?

Mr. DRAKE: I except to the argument with the witness; and I think it was called for any way, and I don't think that the witness knew the rules of evidence.

General FOWLER: We think that this court can strike out anything, and I move that it be stricken out.

Mr. DRAKE: I appeal from the move. Appeal granted.

Q. 33. Anyway, you- land won't raise oats; it takes pretty good land to raise oats, don't it?

A. Yes, sir, and we used to raise good oats.

Q. 34. That was before the land was worn out, wasn't it?

A. Well, our land ain't worn out. We put fertilizer on it, and we grow stuff on it.

Q. 35. This year, was the smoke in there in the forests as bad aheretofore?

A. No, sir, I don't think that it was.

Q. 36. Did you file a claim last year before this board of arbitrators?

A. No, sir.

Q. 37. Have you one this year?

A. Yes, sir.

285 Q. 38. How much damage are you claiming?

A. I disremember.

Q. 29. Don't you recall how much you are asking for?

A. No, sir, I disremember.

Q. 30. Two Hundred dollars?

A. I can't say, I disremember.

Q. 31. When did you file it?

A. I believe it was in June, I am not positive about that.

Q. 32. Can't you give us some idea about how much you think you are damaged this year?

A. Just this yea-?

Q. 33. You filed damages for this year, didn't you?

A. Yes, sir.

Q. 34. Your claim include- what?

A. Four years back.

Q. 35. Who are your attorneys representing you in that matter?

A. I don't know them.

Q. 36. Is it Evans, Spence and Moore of Atlanta?

A. Yes, sir.

Q. 37. Anyway, you don't remember how much you claim that you are damaged this year?

A. Well, sir, I didn't file just for one year; it is for four years back. I am claiming damages for more than one year.

Q. 38. Really, what you contemplate is the bringing of a suit and not a claim before this board of arbitrators—have you got a claim in before this board of arbitrators?

A. I don't know who the arbitrators is.

Mileage of witness: 12 miles.

G. M. PANHORST, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. How old are you, and where do you live?

A. I am thirty-one years old, and I have lived at Copperhill for the past ten years.

Q. 2. What is your occupation?

A. I am chief clerk for the Tennessee Copper Company.

Q. 3. Do you now say that you were in that same employment in 1913?

A. I was.

Q. 4. Do you know at what time in 1913, if the Tennessee Copper Company closed down, at what time they closed?

286 A. They did; they closed on the morning of May 4th, 1913.

Q. 5. When did they resume operations?

A. We went to smelting in the furnaces on May 16th, 1913.

Q. 6. Between May 4th and May 16th, 1913, was the Tennessee Copper Company operating any furnaces?

A. They were not, as far as I know.

Q. 7. Were you there?

A. I was and would have known it if they had been running. We blew in one small furnace on May 16th.

Q. 8. You say that they blew in one small furnace on the 16th, when did they blow in all the furnaces in May, or do you know?

A. We blew in all the furnaces the next morning.

Q. 9. Coming down to 1914, if the Tennessee Copper Company closed down, when was it?

A. They closed at six A. M. June 23rd.

Q. 10. When did they resume operations in 1914?

A. One furnace at four P. M. July 6th.

Q. 11. When was the next one blown in?

A. On the 7th of July at nine A. M.

Q. 12. Between June 23rd, when they closed down and July 6th, was the Tennessee Copper Company operating any green ore furnaces?

A. They were not.

Q. 14. Were they operating anything that created sulphurous fumes or smokes during that time?

A. No, sir.

Q. 15. They were not doing any smelting during that time?

A. No, sir.

Cross-examination by General FOWLER:

Q. 1. Didn't the Ducktown Company also shut down their furnaces this year?

A. I understand that they did; definitely, I don't know, I wasn't there.

Q. 2. Do you remember the plants which they were not operating?

A. I don't know definitely.

Q. 3. Don't you know that they were not operating on the 30th of June of this year?

A. No, I don't know that that is a fact.

Q. 4. Don't you recall that they blew in on the first or second of July?

A. I don't know the dates definitely at all; I understand they hadn't been operating.

287 Q. 5. Couldn't you tell from the appearance?

A. I wasn't around their plant at all; you see they are three or four miles from the Tennessee Copper Company's plant.

Q. 6. Didn't they also shut down in 1913?

A. I don't know.

Q. 7. You spend nearly all your time around the furnaces?

A. I have been in the office of the Tennessee Copper Company for ten years.

Q. 8. You go into the plant from time to time?

A. Yes, sir.

Q. 9. You know the odor of the smoke?

A. Yes, sir.

Q. 10. You know the odor of the smoke from the acid plants in there?

A. Yes, sir.

Q. 11. Do you know the difference between the odor of the smoke when the acid is not extracted from that where it has been extracted, that is, before the acid plants were installed, you smelled the smoke——

A. Yes, sir.

Q. 12. You have been there since they were installed and have smelt the smoke also?

A. Yes, sir.

Q. 13. State whether or not the extracting of the acid from the smoke, makes any difference in the odor?

Mr. DRAKE: We except to the question for the reason that there are no facts stated to justify any such question, and besides there is no evidence that the sulphuric acid has been extracted from the smoke. Exception overruled. Appeal prayed and granted.

A. Well, I don't know. I haven't been on top of the acid plant where any of the fumes would be left to be able to state definitely.

Q. 14. Well, did you detect any difference in the odor of the smoke, the sulphur smell, since they have been extracting the acid?

A. Well, sir, it has not been as noticeable right at the plant.

Q. 15. It has an odor since the acid has been extracted?

A. I can't say definitely whether it has or not.

Q. 16. You have been there so much that you don't pay any attention to it?

A. I didn't pay any attention to it really.

288 Q. 17. Were you there from 1906, 1907 and 1908 on up to the present time?

A. Yes sir.

Q. 18. Do you know what the conditions were so far as vegetation is concerned in that vicinity around Copperhill?

A. Yes sir.

Q. 19. State whether or not you have traveled from time to time up in North Georgia?

A. Yes sir, I have, to Blue Ridge, Chestnut Gap and Mineral Bluff.

Q. 20. How often do you visit Blue Ridge?

A. Maybe once a month; sometimes less.

Q. 21. During the summer season?

A. I have no stated periods. I have been here during all seasons.

Q. 22. During these various trips, were you also up about Mineral Bluff during the growing season?

A. Yes sir; more especially for the last few years.

Q. 23. What were the conditions through this North Georgia section during 1906, 1907 and 1908, just after this high stack was erected?

A. You could notice it, but I don't know much about it, but you could notice the effects.

Q. 24. State whether or not you could see vast stretches of forest, before the acid plants were put in, which were apparently scorched?

A. I never saw any whole stretches of forests that were burned.

Q. 25. You have seen trees and patches of the forests brown?

A. Yes sir.

Q. 26. How does it compare now with before these acid plants were put in?

A. Last year there was no comparison between the growth of the vegetation both locally and as far out as I have been, at Blue Ridge and around here.

Q. 27. No comparison, what do you mean?

A. Everything is a whole lot better than I ever saw it before.

Q. 28. State whether or not there are some fine gardens right in Copperhill?

A. There are some good gardens.

Q. 29. And splendid corn fields?

A. There is some good corn, especially right across the
289 river from the smelter.

Q. 30. How far is that?

A. I can't say definitely; it can't be over a quarter of a mile.

Q. 31. In your judgment is it over a quarter of a mile?

A. No sir.

Q. 32. They grow all kinds of vegetables in those gardens?

A. I have seen good beans and peas and corn.

Q. 33. And tomatoes?

A. Yes sir.

Q. 34. Everything that they ordinarily grow in gardens?

A. Yes sir.

Q. 35. Have you seen any gardens in Copperhill this present year that appear to have been effected by the smoke?

A. No sir.

Q. 36. Have you been around Isabella?

A. Not very much.

Q. 37. You don't know the conditions there?

A. No sir; I have just been around there on a buggy ride and that wouldn't give me a chance to see the conditions there.

Q. 38. Have you been over about Epworth and Chestnut Gap and through that Section there, this year?

A. Yes sir.

Q. 39. What called you there?

A. I was just driving around with my wife in the machine.

Q. 40. Good automobile road around through there?

A. Yes sir, around through Gravely Gap there into Blue Ridge.

Q. 41. What are the conditions of the forest and the vegetation through there?

A. Look good to me.

Q. 42. When were you last through there?

A. I was through Epworth, I think approximately six weeks ago.

Q. 43. Did you notice any effects, any apparent effects of the sulphur fumes through that whole stretch of country?

A. I did not.

Q. 44. Do you know whether or not you would have seen it had it been there?

A. I would think so. Driving along I would look into a man's field and everything looked fine to me.

Q. 45. State whether or not during the present season you
290 have been through many miles of the forests in Georgia, passing along the roads?

A. I don't know how many miles, *but* I have passed along but I have been from Copperhill to Gravely Gap, and then into Blue Ridge, twelve miles, make that circle, I suppose about eighteen or twenty miles.

Q. 46. Have you not also been up on the Blue Ridge?

A. Yes sir.

Q. 47. How far is that?

A. Twelve and a half miles.

Q. 48. Been to Mineral Bluff?

A. Yes sir, I said that I would come from Copperhill through Gravely Gap into Blue Ridge, and back to Copperhill by way of Mineral Bluff.

Q. 49. How often have you been over that route?

A. I guess half a dozen times.

Q. 50. Have you ever noticed anything to indicate that these forests were in an abnormal condition?

A. I have not.

Q. 51. Did they or not look perfectly green?

A. They did to me.

Q. 52. How were the garden crops along the route, so far as you noticed?

A. They looked good.

Redirect examination by Mr. DRAKE:

Q. 1. You folks that live there in Copperhill where there is not a vestige of timber, most any kind of timber looks good to you, don't it?

A. Might be; still I have been out quite a lot.

Q. 2. Where is Gravely Gap?

A. Between here and Copperhill. I think Gravely Gap is out there at the cross-roads.

Q. 3. In coming to Blue Ridge from Copperhill you come through that gap?

A. Yes sir.

Q. 4. You haven't been West of Epworth have you, up on Fightin' Town Creek, up in that country?

A. Yes sir, I have been up there; I was up there about five weeks ago, I should say.

Q. 5. How far up that way?

A. I don't know the mileage.

Q. 6. Do you know what points you went through?

A. Yes sir, I went through Madola to Pearceville.

Q. 7. Over about mine No. 20?

A. Yes sir, still further away from Copperhill than mine
291 No. 20.

Q. 8. Which way, about South from mine 20, is Pearceville?

A. Almost, I should say.

Q. 9. You were asked about a fine cornfield growing there in about a quarter of a mile of the Tennessee Copper Company's plant?

A. Yes sir.

Q. 10. I will ask you if the Tennessee Copper Company's plant is not up on a high hill above that corn field?

A. Yes sir, the Tennessee plant is, I should say, on an elevation of 75 feet above that ground.

Q. 11. And the stack is about 325 feet high?

A. Yes sir.

Q. 12. And the fumes from that plant would come out into the air four hundred feet above that corn?

A. Yes sir.

Q. 13. And naturally if the wind was blowing, it would go over that cornfield?

A. In some cases it would and in some it wouldn't. I have seen the smoke from that stack, when the atmosphere was heavy come almost down on the plant.

Q. 14. But under ordinary conditions, it would blow away?

A. That would depend on the atmospheric conditions.

Q. 15. Has the building of that high stack benefited the country?

A. Conditions are better than they were, but whether that is due to the acid plant or the high stack, I don't know; but I would say the acid plant, rather than the high stack.

Q. 16. You don't know, do you?

A. I don't know either way.

Q. 17. If it is a fact that 10 and 20 miles away from there where there wasn't any damage before, and after the high stack was built, the smoke come in there and killed the timber absolutely dead, that would make you think the other way, wouldn't it?

A. That would be a conclusion.

Q. 18. You didn't find any green corn patch at Isabella,—how far is that away?

A. Approximately three and a half or four miles.

Q. 19. You are not a botanist, or timber man or etymologist or anything like that?

A. No sir.

292 Recross-examination by General FOWLER:

Q. 1. Isn't there one of the finest groves of oak timber you ever saw, right there at Epworth?

A. It's a fine grove.

Q. 2. Have you seen that this year?

A. I have.

Q. 4. When did you see it?

A. Five weeks ago, approximately.

Q. 5. Did you observe anything whatever wrong with that grove this year; how did it look?

A. It looks good.

Q. 6. Wasn't there a drouth of about six weeks around Copperhill and through this section?

A. There was at Copperhill, and I prsume in this section.

Q. 7. Wasn't that one of the worst drouths you have ever known for that season?

A. Yes sir.

Q. 8. Do you remember that the drouth was broken on the 4th of July; that the drouth ended at that time?

A. It did rain on the 4th of July, and I believe that was the first rain we had in some six or eight weeks.

Q. 9. How far is it from Copperhill to Epworth?

A. I think three to four miles.

Q. 10. You stated, Mr. Panhorst, that you have seen that smoke drop practically on the ground?

A. I have.

Q. 11. Sometimes wouldn't it cover the ground for a mile around the stack?

A. Well, I don't know how far it would go that way, because I never paid any attention to it. I do know that it will come up around the office there, the plant and the residences, there.

Q. 12. Sometimes it will float for half a mile and then drop? You have noticed that, haven't you?

A. I never noticed that particularly, but it will do that; I have seen it once or twice; I don't know how often.

Mileage of witness: 24 miles.

L. C. ALLEN, being sworn to speak the truth, the whole truth, and nothing but the truth, testified:

Direct examination by Mr. HILL:

293 Q. 1. How old are you Mr. Allen?

A. Seventy-eight years old day before yesterday, the 12th day of this month.

Q. 2. ——.

—. I live five miles from here on Jack River, over near Morgantown.

Q. 3. What is that neighborhood known as?

A. I don't know that it has any particular name. I am a mile and a half South of Morgantown. I live on E. W. Chastain's farm on Jack river.

Q. 4. How long have you been living there?

A. About thirty years.

Q. 5. Have you ever been around the Ducktown plant or the Tennessee Copper Company's plant?

A. Many a time.

Q. 6. Did you ever smell that smoke?

A. Yes sir.

Q. 7. Have you ever seen any smoke similar to that on your place?

A. Yes sir.

Q. 8. How many times?

A. I can't tell you; too numerous to mention.

Q. 9. Can you see it?

A. Yes sir, and smell it and taste it; you can taste it sometimes.

Q. 10. What does it smell like?

A. Sulphur.

Q. 11. Are you a farmer?

A. Yes sir, and have been all my life.

Q. 12. What do you raise over there?

A. We raise corn, small grain and vegetables of all kinds.

Q. 13. Did you ever notice your crops immediately after that smoke had been down on them?

A. Yes sir.

Q. 14. What condition would they be in?

A. They would turn a dark color; it blacks the shucks on the corn, and sometimes it kills the fodder; it did this year.

Q. 15. Did you see it this year, the smoke?

A. As bad in July and June as it's ever been.

Q. 16. Do you know about the timber around in your section—the woods?

A. In my section there is a lot of the timber dead and dying; there is no growth, and I don't think there has been no growth in the forest for the last several years.

Q. 17. Can you name any particular dates this year that
294 you saw the smoke in there?

A. Yes, I have got it down. I set it down in the almanac; I set it down as it come in there.

Q. 18. Give us those dates, please?

A. I will give it to you in a minute; it damages my fruit mightily, my peaches——

Q. 19. Tell us about that?

A. They are a little over half gone; they are right black; it blacks it and rots it. I have got a peach in my pocket, and I can show you how it looks when that smoke settles on it. This is an Elberta; they have rotted, nearly all this year. Now I will give you the dates. The first, second and third of July and fourth of July, and especially the second and third of July was the heaviest smoke I ever seen in there.

Q. 20. What dates?

A. The second and third of July.

Q. 21. Which days was it in there?

A. All four days, but the 2nd and 3rd of July was the heaviest smoke I ever seen.

Q. 22. Where were you on those dates?

A. I was at home, where I am every day.

Q. 23. That is where you saw the smoke, at home?

A. Yes sir.

Q. 24. Where was it, in your crops, in the woods or where?

A. To give you an idea of it; I am down there, and it's over twelve miles on a direct line from my house to Copperhill, and I live right there near the river, and when the smoke comes in there it strikes me right square, and when the heavy smoke comes in there I am right in the face of it. I have seen it so thick through there that you couldn't tell a man from a woman four hundred yards away.

Cross-examination by General FOWLER:

Q. 1. Let me see your almanac?

A. There is two marks down in there. You will find some marks in there in June that don't represent smoke. I will show you the dates it was in there.

Q. 2. Tell me why one don't represent smoke?

A. These here dates represent smoke (indicating) that
295 is in June; now here on the 14th, that don't represent smoke; I am going to indict a man for his misconduct.

Q. 3. You have brought that almanac here with you?

A. Yes sir. I keep that by my desk, and when it's a smoky day, I set down a smoky day.

Q. 4. That is the way you kept books of the smoke, is on this almanac?

A. Yes sir, the days that smoke was in there.

Q. 5. And also the days you are going to indict some fellow?

A. Yes sir, when they do something they ought to be indicted for, I mark it so that I can indict them and give the date.

Q. 6. Do you indict a fellow every month or two?

A. No sir.

Q. 7. Two or three every month?

A. No sir.

Q. 8. How many — you indict during the month of June?
A. Only one; he stripped off before my grand-daughter.
Q. 9. Haven't you got two dates marked here to indict some fellow in June?
A. No sir, the dates with the cross marks is the days smoke was there.
Q. 10. What date did you mark to indict some fellow in June?
A. That's July.
Q. 11. Haven't you got a date to indict somebody in June too?
A. No sir.
Q. 12. What is that, the 10th and 11th? (Indicating.)
A. That's smoke.
Q. 13. That's a different kind of mark there, what is that? (Indicating)
A. I expect my little daughter marked that; I don't know what that means.
Q. 14. Now, have you got marked up on this almanac, every day that smoke was in there?
A. No sir, I have it when it was bad. I marked it when it was bad.
Q. 15. Was it bad on June 4th.
A. Yes sir.
Q. 16. Bad on that date?
A. Yes sir.
Q. 17. Well, was it bad on June 13th.
A. I reckon so.
Q. 18. Was it bad on June 20th?
A. It was heavy when I marked it.
Q. 19. Was it bad on the 20th of June?
A. Is it marked?
296 Q. 20. I am asking you, was it bad on the 20th of June?
A. I can't recollect; I have got it marked there.
Q. 21. You haven't any recollection at all independent of these little marks?
A. Yes sir, the smoke was in there the days it is marked.
Q. 22. How was it on the 26th of June?
A. I don't recollect the dates? I set it down in there when it was bad.
Q. 23. About how long would it be 'tween times?
A. I can't tell you that, them dates I marked there is the only way I can tell you.
Q. 24. Was there any days in the month when the smoke was not there?
A. I don't know.
Q. 25. What is your best judgment?
A. My judgment is that when the wind set from the Northwest that it brings the smoke in there.
Q. 26. What is your best judgment as to whether there was any week without smoke?
A. This is the first time I was ever brought in this business.

Q. 27. I am asking you about the smoke?
A. There ain't no use trying to cross me and catch me.
Q. 28. How was it on the 24th of July?
A. The 24th, 25th and 26th the smoke was pretty heavy.
Q. 29. It was on those dates?
A. Yes sir.
Q. 30. How was it on the 24th, 25th and 26th days of June?
A. I don't recollect that.
Q. 31. You haven't any recollection at all about it?
A. I haven't any recollection about them dates.
Q. 32. Who else been marking on this thing besides yourself?
A. Nobody, but myself.
Q. 33. You said a while ago that your daughter might have marked on it?
A. I said she might have made that mark.
Q. 34. Did you make those opposite the 10th and 11th?
A. I made a cross mark there.
Q. 35. She has been marking on it as well as you have?
A. She might have done it; I didn't do this here.
297 Q. 36. What is this writing here?
A. I told you while ago that a man stripped in the presence of my grand-daughter that date and I am going to indict him.
Q. 37. Any been there in August?
A. I reckon there has.
Q. 38. What do, you think about it?
A. That's all I have got marked; that smoke struck my vines I know that.
Q. 39. What kind of days were the second and third of July?
A. I can't answer that.
Q. 40. What day of the week was the second and third of July?
A. Tell me what day the month come in on and I'll tell you.
Q. 41. I am not telling you anything; I am asking you?
A. There's the almanac, it will tell you.
Q. 42. Was there any smoke in there in April?
A. I don't recollect.
Q. 43. You can't tell anything about that at all; I see you have marked April here, does that mean anything?
A. No sir.
Q. 44. Was there any smoke in April?
A. I have only got two months marked.
Q. 45. Was there any smoke in May?
A. I never marked any of the smoke except in June and July.
Q. 46. You didn't mark any of the smoke in May?
A. See if you can find any.
Q. 47. You didn't mark any in May, Just July and June?
A. June and July is all I recollect.
Q. 48. Was there any smoke in there in May?
A. I reckon there was, but it wasn't heavy.
Q. 49. What have you got a cross mark here opposite the 13th in May, why did you mark it if there wasn't anything?

A. Whatever I have got marked; let me see (Looks at almanac) Yes sir, that is smoke that day.

Q. 50. What are these other marks here the 21, and 22nd, that smoke?

A. Yes sir, and the 28th.

Q. 51. Isn't it a fact that you have kept everything on that book, and don't know what is smoke and what is not smoke?

298 A. Yes I do; if you want to know what that is, this 28th, that is the day a man done some big swearing.

Q. 52. Are you going to indict him for it?

A. Would you let a man swear in the presence of your women folks and not indict him for it?

Q. 53. So you are going to indict a man in May for swearing in the presence of your women folks?

A. I guess so.

Q. 54. Isn't it a fact that when you want to jot down anything you go and make a cross mark opposite that day in your almanac, isn't that so; every time you want to make a note of anything you go and take your almanac and make a cross mark?

A. Yes sir.

Q. 55. Every time a fellow swears you put it down?

A. I set this down, the day and the month so I wouldn't forget it.

Q. 56. You really don't know what some of those cross marks mean, do you?

A. Yes sir, I know what every one of them means.

Q. 57. How big a farm have you?

A. Is that necessary?

Q. 58. It's not necessary, but I am entitled to an answer.

A. I really don't know the number of acres.

Q. 59. Well, one hundred and sixty?

A. I don't know whether it is one hundred and sixty or not. I own a part of three lots.

Q. 60. How much cleared land?

A. Seventy five acres.

Q. 61. How long has it been cleared?

A. Good many years; I have been living on it for thirty years.

Q. 62. Pretty poor land?

A. No- so overly poor.

Q. 63. You can't make much of a crop on it?

A. We make enough to live on, sir.

Q. 64. You can't make much oats on it?

A. We don't try.

Q. 65. You have an orchard up there?

A. Yes sir.

Q. 66. Raise apples?

A. Apples, peaches, plums and pears.

Q. 67. How much have you been damaged this year; how much do you claim?

A. I can't tell you exactly; I don't recollect what the claim was that I made.

299 Q. 68. When did you put your claim in?

A. I can't tell you exactly. When the men was around looking; one from Knoxville and one from Georgia.

Q. 69. How long ago was it?
A. It was in May, I reckon.
Q. 70. Do you remember how much it was?
A. No sir, I don't recollect.
Q. 71. Two hundred and fifty dollars?
A. No sir, not that much.
Q. 72. One Hundred Dollars?
A. I reckon about One Hundred Dollars.
Q. 73. Did you have in a claim last year?
A. Yes sir.
Q. 74. How much?
A. I got ninety dollars.
Q. 75. How much did you put in for?
A. I don't recollect.
Q. 76. Three or four times that much wasn't it?
A. No sir, not three or four times; I didn't put in no big thing; I put in what I thought I was really damaged.
Q. 77. How many years did you put in for last year, just one year or three or four years?
A. I reckon it was for three years.
Q. 78. And you got Ninety Dollars for three years?
A. I don't recollect exactly. I don't want anything only just what is right. If they will just keep that smoke off of me I will never ask them for a cent.

It is agreed by and between counsel for the State and the defendant that witness lives thirteen miles from Copperhill and fourteen and a half miles from Isabella, and Southeast from Isabella; air line.

T. R. HARKINS, Sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. HILL:

Q. 1. How old are you?
A. Forty-two years old.
Q. 2. Where do you live?
A. In the West end of Fannin.
Q. 3. Near what point?
A. Near Jack River.
Q. 4. What is the settlement name?
A. Jack River.
300 Q. 5. What is your post office?
A. Oasis.
Q. 6. How far from the plant of the Tennessee Copper Co.?
A. I can't answer that question correctly.
Q. 7. How long have you been living there?
A. Thirteen years.
Q. 8. You a farmer?
A. Yes sir.
Q. 9. What do you raise there?
A. Corn and potatoes and such like; vegetables.

Q. 10. Have you ever been up around Isabella or Copperhill?
A. Yes sir.
Q. 11. Did you ever see and smell the smoke up there?
A. Yes sir.
Q. 12. Have you ever seen any smoke around your place there?
A. Yes sir.
Q. 13. Does it or not smell like the smoke you smelt at Isabella and Copperhill?
A. Yes sir, so far as I can tell it does.
Q. 14. About how often do you see that smoke at your home place, and for how long have you been seeing it?
A. I have been noticing it there for several years; I can't say how often.
Q. 15. Which direction are you from the plants?
A. Little West of south.
Q. 16. What wind brings it to you?
A. The Northeast wind.
Q. 17. What is the condition of your crops, Mr. Harkins?
A. Reasonably well this year.
Q. 18. Have you ever noticed it any time when the smoke would come down on your crops?
A. Yes sir.
Q. 19. Have you ever noticed them shortly afterwards?
A. Yes sir.
Q. 20. What was their condition then?
A. Changed to some extent.
Q. 21. What would be the appearance of them?
A. The most smoke damage I noticed was done to my vegetables.
Q. 22. Describe their appearance?
A. It kinder wilts the stuff; and browns the timber and a great deal of it dries up.
Q. 23. Have you ever noticed the condition of the timber there on the sides of the mountain?
A. This year?
Q. 24. Last year?
A. Yes sir.
Q. 25. What was that condition?
A. Very bad this year on this side.
301 Q. 26. Have you ever seen smoke in those woods?
A. Yes sir.
Q. 27. Did you ever examine the timber afterwards?
A. I simply taken notice to it.
Q. 28. What was the condition after the smoke had been in there?
A. It changed all the timber in June, and that specially noted by me was in the white pine.
Q. 29. What was the condition of that?
A. It changed its color; kinder wilted it down and changed the color of the leaves to a certain extent and the leaves died later on.
Q. 30. What would you say was the condition of that side of the mountain?

A. The West side or the East?
Q. 31. The side towards the plants?
A. In very bad condition.
Q. 32. How long have they been in that condition?
A. I am not able to state for certain; I haven't been there to look.
Q. 33. That this year and last year?
A. Yes sir.
Q. 34. What mountain is that?
A. The Blue Ridge; I noticed it coming out yesterday.
Q. 35. Have you ever noticed Barnes mountain?
A. Yes sir, that is the mountain I spoke of.
Q. 36. That a part of the Blue Ridge?
A. Yes sir.
Q. 37. Do you live anywhere near Flat Top?
A. Yes sir.
Q. 38. Have you noticed all of these mountains through there, Flat Top, Barnes and Blue Ridge?
A. Not this year; I was up there last year.
Q. 39. What was the condition last year?
A. I never noticed in particular.
Q. 40. I mean on Barnes and the Blue Ridge there?
A. I don't hardly think it was as bad last year as it is this year.
Q. 41. Many of the leaves burned this year?
A. Yes sir.
Q. 42. About what percentage, if you know?
A. I don't know that I could answer that.
Q. 43. Many of them burned?
A. Yes sir a great deal; a good per cent of them anyway.
302 Q. 44. Do you remember when a party came there to your place to investigate for the copper company?
A. Yes, sir.
Q. 45. Did they camp on Jack river?
A. Last year?
Q. 46. At any time?
A. Last year?
Q. 47. Did you see them last year?
A. Yes sir.
Q. 48. Did they come to your house?
A. Yes sir, I believe that some of them came to my house.
Q. 49. Did Mr. Sherman Reese come to your house?
A. Yes sir, I know him, but I don't remember that Mr. Reese was at my house. There was a party come by there one day and possibly Mr. Reese was in the crowd. They passed my house very often while at work.
Q. 50. Did you talk with them?
A. Yes sir.
Q. 51. What were they doing?
A. I can't say.
Q. 52. What did they tell you they were doing?
A. The told me, I believe, that they were estimating the damage to the timber.

Q. 53. I will ask you to state whether or not you showed them any damage?

A. I can't say that I directly showed them any damage, but I spoke of the damage.

Q. 54. You told them about the damage?

A. I told Mr. Reese about the damage on this side, but he didn't go, I believe on that side. This wasn't the time that they camped out there.

Q. 55. I will ask you to state whether or not at that time you told Mr. J. A. Miller or anybody else that there was no damage?

A. No sir, I never told them that.

Q. 56. I believe you stated that you told them there was damage there?

A. Yes sir, before this.

Q. 57. Do you remember any dates on which damage was done last year?

A. Yes sir, I think I do.

Q. 58. Give us a date, if you can remember it?

A. May 12, I saw smoke, and I saw the damage afterwards when I was on Flat Top.

303 Q. 59. Did you see any smoke on that date?

A. Yes sir; I saw it come out from the basin.

Q. 60. You mean come out of the Ducktown basin?

A. Yes sir, towards my country there.

Q. 61. Could you see it and smell it?

A. Yes sir, I was up on the mountain and could see it come in and after I come down in the valley into the smoke I could smell it.

Q. 62. That last year, 1913?

A. Yes sir.

Q. 63. Did you have occasion to notice the timber after that?

A. Yes sir.

Q. 64. What was the appearance after that?

A. It discolored it.

Q. 65. Did you notice any change in the white pines at that time?

A. Yes sir.

Q. 66. What was the change?

A. It discolored it considerably. Some of it died, and I moved out some this Spring.

It is agreed by and between Counsel for the State and for the Defendant that the witness lives eleven and a half miles from Copperhill, and thirteen miles from Isabella, in a Southwesterly direction, air line.

Cross-examination by General FOWLER:

Q. 1. How long have you lived there?

A. Thirteen years.

Q. 2. How long has that smoke been coming down in there?

A. I am unable to state.

Q. 3. Five or six years?

A. Something like that; perhaps longer.
Q. 4. Can you remember the year it first came in there?
A. No sir, I am not able to state.
Q. 5. Wasn't it 1907 or 1908, seven or eight years ago?
A. I am not positive about that.
Q. 6. You think five or six years ago, possibly a little longer.
Q. 7. Yes sir, that, or longer than that.
304 Q. 8. For the first two or three years after it first began, the entire mountain was scorched pretty badly wasn't it?
A. Last year was our worst year that we have had; that is to say in my country.
Q. 9. Were you out of your immediate vicinity?
A. That was, in my immediate vicinity.
Q. 10. I am talking about the whole mountains taken together.
A. I haven't been over the mountains much this year; hardly any.
Q. 11. You don't know how they are this year?
A. Except I said a while ago, along on this side.
Q. 12. How much and what extent of the territory have you been over and know something about?
A. The road from Oasis leading to the mountain, about four miles.
Q. 13. Is that the extent of your knowledge?
A. Yes sir, where I have visited.
Q. 14. How far is that from Blue Ridge?
A. The nearest point in this direction I suppose is twelve miles, ten, eleven or twelve.
Q. 15. How did you come to Blue Ridge?
A. By Oasis.
Q. 16. Who came with you?
A. Mr. Brown.
Q. 17. You came through ten, eleven or twelve miles this morning?
A. Yes sir, something like that.
Q. 18. Aren't the forests between here and your place about as green as you ever saw them?
A. They are some greener this year; that is between here and Mr. Brown's.
Q. 19. Isn't it a fact that these mountain forests are in as healthy a condition as you ever saw them in your life?
A. I can't state to that effect positively.
Q. 20. They look green don't they?
A. When I first passed through them I never took no notice of that, and I can's state as to that.
Q. 21. Where were you raised over in that section?
A. No sir, I wasn't raised there.
Q. 22. Was there any damage over there in 1912?
A. Yes sir, there was some in there in 1912, I suppose;
305 there has been every summer for several years.
Q. 23. How much were you damaged in 1912?
A. I am not able to state that.

Q. 24. Two years ago?
A. I am not able to state that.
Q. 25. Don't you know what was damaged on your place two years ago?
A. I can't tell you to what extent.
Q. 26. You were looking for damage on your place?
A. No sir.
Q. 27. Have you filed a claim?
A. No sir.
Q. 28. You have for this year, haven't you?
A. No sir.
Q. 29. You are going to file it?
A. I can't say that I would.
Q. 30. You have the matter under consideration?
A. Yes sir.
Q. 31. What kind of crops did you have in 1912 and 1913?
A. In 1913, the crops wasn't so good.
Q. 32. How were they in 1912?
A. In 1912, I believe they were something like an average, as well as I remember at the present.
Q. 33. Do you know Mr. R. A. Shiflett?
A. Speaking of that Mr. Shiflett?
Q. 34. Yes?
A. Yes sir, I have met him.
Q. 35. Is that the same gentleman that camped up there on Jack's river?
A. Yes sir.
Q. 36. You have talked with him?
A. Yes sir.
Q. 37. Didn't you have a talk with him about the corn crops?
A. I can't state about the corn crops.
Q. 38. Didn't you tell him that the corn crops hadn't been damaged?
A. No sir, I don't recollect that I did.
Q. 39. Do you know whether you did or not?
A. No sir, I had no talk with him about crops not being damaged.
Q. 40. Didn't you tell Mr. Shiflett when he was camping on Jack River that smoke never damaged anything in that country or section of the country?
A. No sir, I did not.
Q. 41. You swear positively that you didn't make that
306 statement to Mr. Shiflett at that time?
A. Yes sir, positively. Mr. Shiflett and me had a conversation about the damage.
Q. 42. What did you tell him?
A. It come up in this way. Mr. Shiflett seeing my crops there, and he was asking me about the locations of certain property, and he offered me a proposition to work for him, and I told Mr. Shiflett I wasn't the man. I never went into details with him; he wanted me to work for him and I told him I wasn't the man; I

thought I understood the matter and what he wanted me to do, and I told him I wasn't the man. I saw other men at work.

Q. 43. What were the other men doing?

A. They were riding around there looking about over the timber I suppose, I *suppose, I* never traveled with them.

Q. 44. You didn't ride with them and look at the timber?

A. No sir; I told him I wasn't the man he wanted, and he asked me why, and I hold him that I claimed there was damage.

Q. 45. You swear that you told Mr. Shiflett that?

A. Yes sir, and I think I can be able to prove it?

Q. 46. By whom?

A. Mr. John Jones.

Q. 47. Any one present with you and Mr. Shiflett?

A. Yes, sir, several were around there, but I am not positive who all of them were.

Q. 48. Mr. Sherman Reese there?

A. Perhaps he was; I can't say that he was for sure.

Q. 49. Do you know what Mr. Shiflett was doing there at the time?

A. He was seeking out that timber at that time.

Q. 50. Don't you know it to be a fact that you told Mr. Shiflett that there never was any damage in that community, and that he then asked you to go to Chattanooga through the country and look over that section of the country, and that you told him that you didn't want to be a witness; that the other fellows had been trying to get you for a witness for them, and that you had refused to testify, and that you didn't want to be a witness at all?

307 A. No sir, I think you misunderstood, if you understood me to say I told him there was no damage; I didn't tell him that.

Q. 51. He did try to get you to go to Chattanooga to look over these lands, didn't he?

A. No sir, he never mentioned Chattanooga to me to look the timber over.

Q. 52. He did ask you to go to Chattanooga to be a witness?

A. He rather led up to that point; he give me to understand that he wanted me to go.

Q. 53. After you told him what you knew about it, didn't he tell you that he wanted you to go to Chattanooga?

A. Yes, sir, but that was before I told him that I claimed that there was damage.

Q. 54. Didn't you tell him that the other parties had been trying to get you to testify for them, and that you had refused to do it?

A. I told him that the other parties had spoke to me about working for them, but I didn't want to do it; that I didn't want to be a witness for either party.

Q. 55. Who was the other party that was trying to get you to work for them?

A. Mr. Vestal there spoke to me.

Q. 56. Didn't Mr. Vestal have you come here?

A. Yes sir; this was after this time. I hired to Mr. Vestal to work for him, and he had me come here.

Q. 57. You have been working for Mr. Vestal since that time?

A. Yes sir.

Q. 58. When did you quit working for him?

A. I can't give you the dates; it was last fall.

Q. 59. How long did you work for him?

A. I can't give you the dates.

Q. 60. How much did Mr. Vestal pay you for your labor, so much per day?

A. Yes sir.

Q. 61. Has he paid you anything to come here and testify?

A. No sir.

Q. 62. Is he to pay you something for your day's work?

A. No- that I know of; he hasn't promised me anything.

308 Q. 53. You own any lands in that neighborhood?

A. Yes sir.

Q. 54. You own the land you live on?

A. Yes sir.

Q. 55. You are not on his land?

A. No sir.

Q. 56. Now in regard to this smoke in 1913, what time was it that you first remember it coming in there?

A. It was in May—May 12th; that is the only date I remember.

Q. 57. Had you seen it in there before that?

A. Yes sir, it was in there before that.

Q. 58. How often?

A. I can't state.

Q. 59. From the Early Spring?

A. Yes sir, all along.

Q. 60. On what date was it that you had that heavy frost over in there?

A. Well, I don't remember, right at present.

Q. 61. Wasn't it on the 10th and 11th of June?

A. Yes sir, something like that.

Q. 62. You had a heavy frost in that neighborhood?

A. I can't say a heavy frost; I saw a little out there on the fence one morning.

Q. 63. It was cold?

A. Yes sir.

Q. 64. Didn't it afterwards freeze?

A. Yes sir, to have frost it must have.

Q. 65. As a matter of fact didn't you see ice?

A. No sir, frost; if you call frost ice, I saw it.

Q 66. On the 9th it was very cold wasn't it?

A. What time?

Q. 67. The 9th of June, 1913.

A. I can't say.

Q. 68. Very cold for that season of the year?

A. Yes sir, I suppose it was, along about that time; I don't remember, particular.

Q. 69. Anyway, along about that time it was very cold?
A. It was rather a cold time.
Q. 70. Didn't it, just before this frost, didn't it freeze just the day before the frost?
A. What frost?
Q. 71. Wasn't there ice in that community?
A. Not that I know of.
309 Q. 72. And then it turned off next morning into a heavy frost?
A. No sir, not a heavy frost; I saw frost there one time as I stated, only at one place, and I went down to my field to see if it had done any damage, and couldn't find any; I saw a little frost.
Q. 73. Wasn't the vegetables killed from that frost?
A. Not extensively.
Q. 74. Just after the frost?
A. My garden right near it never; frost never bit my beans or anything.
Q. 75. In a few days after that, didn't you see the tops of the white pines with spots that had turned white?
A. I never saw them turn.
Q. 76. They were turned white?
A. There was before that a discoloration of the timber.
Q. 77. Did that arise from smoke, or do, you know?
A. I suppose that it did.
Q. 78. Which came in there earlier in the Spring?
A. Yes sir, I suppose so.
Q. 79. Anyway, you saw discolored timber before then?
A. Yes sir.
Q. 80. And then didn't you see additional discoloration a few days after that?
A. I never made no note of it.
Q. 81. Why make one note and not make another?
A. Circumstances might cause a man to remember things better than he would others, possibly.
Q 82. Did you make any note at all of anything that did happen; did you go any set anything down in a book or anything of that kind?
A. I can't say that I did; I might make a note in this way; make it a point to remember it.
Q. 83. You had seen the smoke drift in from the mines a hundred times, hadn't you?
A. I can't remember the number of times I saw it.
Q. 84. Did you make a note of any other times?
A. No sir, I can't say that I did, except the time I have told?
Q. 85. What was that?
A. The 12th of May.
Q. 86. That is the only time that you know that smoke was in there?
310 A. In particular, yes sir.
Q. 87. That the only time it ever drifted in on you?
A. No sir.

Q. 88. Did it drift in there the first part of May that year?
A. Yes sir, I suppose it did.
Q. 89. You made no note of that?
A. No sir; I can't say that I did.
Q. 90. Did it drift in there the first part of June that same year?
A. Yes sir, I think it was in there that month.
Q 91. Was it in there every week?
A. I can say? I can't answer that.
Q. 2. Did you see it drift in there from time to time and din't make any note of it?
A. Yes sir. One time I saw it drift in from the mines is one of the times I made note of it.
Q. 93. What day of the week was it?
A. Monday.
Q. 94. What time of the day was it?
A. In the evening.
Q. 95. How late?
A. It was the latter part of the afternoon. I saw it come in there. I was on Flat Top that afternoon.
Q. 96. What were you doing on Flat Top?
A. I went up there to buy a cow, and that is how come me to take particular notice of the time. I wasn't to give any note for the cow, but was to remember that interest was to be due from that time.
Q. 97. Who did you buy the cow from?
A. Miles Watkins; that it how come me to remember this particular day.
Q. 98. How far could you see it from where you were?
A. I could see it all back in the basin over in that direction around the mines. Beyond the mines I couldn't see.
Q. 99. You don't know where that smoke came from, whether it come from the Power house or not?
A. Well, I could see the stack?
Q. 100. What stack could you see?
A. I could see the mines there; the stack of the mines.
Q. 101. You saw smoke coming from the stack at the mines?
A. Yes sir.
Q 102. And drifting in there from the stack at the mines?
A. Yes sir.
Q. 103. You say that the trees were burned on the mountain?
A. Yes sir.
311 Q. 104. Were the white pines burned or turned white before that?
A. No sir.
Q. 105. They turned white after the frost?
A. Right before the frost; they turned after this smoke come in there; shortly after.
Q. 106. Let's see, that was on the 10th and 11th of May?
A. June, wasn't it?
Q. 107. Are you swearing about May or June?
A. I am swearing about May; if you are talking about when the smoke come in there.

Q. 108. Any way, smoke had drifted in there before that?
A. Yes sir.
Q. 109. And the pines had turned before that?
A. I never noticed it before that time.
Q. 110 Will you swear that there wasn't any smoke in there on the 10th of May?
A. No sir, I won't say. I wouldn't swear that there wasn't any smoke in there at that time; I couldn't.

Redirect examination by Mr. HILL:

Q. 1. I will ask you whether or not evergreens turn white or change their color from the effects of cold?
A. I never did see it.
Q. 2. Is white pine an evergreen?
A. Yes sir, and I never did see it change color from frost.
Q. 3. Did you ever see frost turn it white or change its color?
A. No sir.
Q. 4. Did you ever look at Mr. Jones' timber?
A. Which Jones?
Q. 5. John Jones?
A. Yes sir.
Q. 6. What was the condition of that about the same time you were talking about?
A. I noticed from the road that the pines were discolored.
Q. 7. When was that?
A. The same time I spoke about.
Q. 8. Right after the 12th of May?
A. Yes sir.
Q. 9. You said something about something happening on the 12th of May, about buying a cow, what was it?
A. I bought the cow on that day, and was to pay interest on the money for the cow from that day.
312 Q. 10. You were coming home with the cow, you say?
A. Yes sir, I was coming back with the cow, driving it home, when I saw the smoke in the basin.
Q. 11. Where was it?
A. It was coming from the basin in there. I saw the stacks.
Q. 12. How many stacks did you see?
A. I don't know how many.
Q. 13. Did you see the plant?
A. I never noticed that. I only took notice like a man will naturally on anything like that. I charged my memory with that; I saw the smoke coming over that country there and settling down below me.
Q. 14. Could you or not smell that smoke after you got into it?
A. Yes sir, I could smell it after I got into it.

Recross-examination by General FOWLER:

Q. 1. You could see one big stack?
A. Yes sir, very plain.

Q. 2. You could see the smoke coming from there?
A. Yes sir.
Q. 3. Mr. Harkins, Mr. Vestal the gentleman you are working for is sitting here right now isn't he?
A. I am not working for him now.
Q. 4. The man you did work for?
A. Yes sir.
Q. 5. He is here suggesting to the attorneys what to ask you?
A. I can't hear what he says.
Q. 6. Haven't you seen him whispering to the attorney who is examining you?
A. Yes sir, I have noticed him talking there.

Mr. DRAKE: We except to the question and answer as being immaterial and irrelevant. Exception overruled. Appeal prayed and granted.

Redirect examination by Mr. DRAKE:

Q. 1. I believe you live just East of what mountain?
A. Cowpen, I believe.
Q. 2. Cowpen Mountain and Jack River?
A. Yes sir.

313 Recross-examination by General FOWLER:

Q. 2. As I understood you, you saw a big high stack?
A. Yes sir.
Q. 3. That stack in plain view from where you were, that high stack?
A. There wasn't any timber in the mountains and you could see it mighty plain that distance; I could see it all right.

Redirect examination by Mr. DRAKE:

Q. 1. You could plainly see smoke boiling up from that stack and then come over this way?
A. Yes sir.
Q. 2. From the stack?
A. Yes sir.

Mileage of witness: 36 miles.

J. J. TURNER, being sworn to speak the truth, the whole truth and nothing but the truth, testified?

Direct examination by Mr. DRAKE:

Q. 1. Where do you live Mr. Turner?
A. Mile on the other side of Morgantown on the river.
Q. 2. How old are you?
A. Fifty years old the 10th of last November.
Q. 3. How long have you been living there?
A. Two crops.

Q. 4. Where did you live before you went there?
A. Down here at Cherry Log.
Q. 5. Is Morgantown in Fannin County?
A. Yes sir.
Q. 6. What is your occupation?
A. Farming.

It is agreed by and between Counsel for the State and for the defendant that the witness lives seven and a half miles from Copperhill and Eight and a half miles from Isabella, in a Southeasterly direction, air line.

Q. 7. Do you own any land?
A. No sir, I do not.
Q. 8. What kind of crops do you raise?
A. I raise tolerable fair crops.
Q. 9. I mean what varieties, what kinds?
A. Corn, wheat, rye, potatoes, cabbage, beans and peas.
314 Q. 10. You say you have been on your present place two years, did you make a crop last year?
A. Yes sir.
Q. 11. Have you seen any sulphur smoke in there last year?
A. Yes sir; I saw it last year there.
Q. 12. What was the appearance of it?
A. It would come in there and bite my corn sorter like frost. When the corn was in silk it would kill the silk and the little roastin' ears.
Q. 13. Could you smell that smoke?
A. Yes sir, and you could taste it.
Q. 14. Speaking of last year what crops and garden truck did it injure for you?
A. My cabbage; last year it killed a lot of cabbage; I raised some afterwards, but the cabbage was little ones, and it hurt my beans pretty bad, my garden beans.
Q. 15. What effect did it have on the beans?
A. It comes down in there and the leaves turn yellow in a day or two and drops off, and does it sorter like frost.
Q. 16. Does it effect your fruit any?
A. Yes sir.
Q. —. How does it effect that?
A. The leaves just shrivel up and drop off.
Q. 18. Did you observe the effect on your corn?
A. Yes sir; you can see splotches on the blades of the corn; it would go plum- through the blades, and by fodder time we ain't got no fodder.
Q. 19. What effect will that have on the crop of corn?
A. It will strike the ear and rot it like it will the fodder; it will shrivel up and won't fill out.
Q. 20. Consequently can you make a fine crop of that stuff?
A. No sir, a man can't make no fine crop.
Q. 21. How much corn did you have in last year?
A. I don't know.
Q. 22. About how many acres?

A. I guess about,—I really can't tell you,—somewhere about thirty acres.

Q. 23. How much of the thirty acres was effected by this smoke?

315 A. It went all through; you can't tell how much it bit over.

Q. 24. Did it strike the whole patch?

A. Yes sir, the whole field was bit, but it was in patches; it would hurt two or three acres in a patch; and maybe it wouldn't hurt the next as bad.

Q. 25. What per cent of a crop did you make last year on account of that smoke?

A. I can't tell you.

Q. 26. Estimate it?

A. I can't hardly tell you how much damage it done. I expect over a hundred bushels of corn, outside of the fodder and beans and things in the field.

Q. 27. Any fruit on the place; apple trees?

A. Yes sir.

Q. 28. What effect would it have on the apple trees when it would hit them?

A. The leaves would wilter up and turn brown and drop off.

Q. 29. How soon after the smoke hits a patch before you can tell the effect?

A. Just a short time; just in a day or two they will wilter up just like frost hit it.

Q. 30. Coming down to this year, has there been any smoke in there?

A. Yes sir.

Q. 31. When did you first observe it?

A. It has been in there off and on all the year.

Q. 32. How have the winds been this year?

A. Mostly from the North.

Q. 33. More than usual?

A. Yes sir; they have been more from the North than generally.

Q. 34. In May did you have any smoke?

A. Yes sir, all through May.

Q. 35. Did it burn anything?

A. You could see a little corn turn yellow.

Q. 36. Did you have any in June?

A. Yes sir; 'long the first of June we had a right smart.

Q. 37. Can you give any dates?

A. No sir.

Q. 38. Any there in July?

A. Yes sir.

Q. 39. When did you notice any in July?

A. On the 3rd and 4th of July; then on up to the 4th and 5th. It comes in there on the 3rd. It come in there that day.

316 I was fixing to go to Copperhill. I saw it coming in there, and went in and eat my dinner and when I come back to catch my mules, you couldn't see down to the river.

Q. 40. How far was it to the river?

A. Half a mile.

Q. 41. How much was there?

A. It was thick like a big fog. My irish potatoes was right there at the barn, and some tomatoes, and they wilted right up. I left there about twelve o'clock and the next day I come back on the 4th.

Q. 42. Where did you go?

A. I went to Copperhill.

Q. 43. When you got there did you see any smoke coming from the Tennessee Copper Co.?

A. No sir, I didn't see none at all.

Q. 44. Did you see any smoke coming from any other direction?

A. Yes sir, back over there toward Ducktown it was boiling up, and come right across this way. I seen it and tasted it and smelled it all the way until I got up there.

Q. 45. Any of your crops that it has effected this year?

A. Yes sir my corn; it is all over the blades, and it is all over my crop of peas worse this year that I have ever saw it.

Q. 46. How much of a corn crop have you?

A. I don't know just how much. There is 60 or 70 acres in cultivation and there is right smart of it in corn.

Q. 47. Is all that corn effected?

A. There is places all over it that is effected. Some places don't look like the other. Maybe two or three acres *acres* it won't hurt, and then maybe tomorrow it will come down and hurt that.

Q. 48. Have an oat crop last year?

A. I never raised any.

Q. 49. Raise any this year?

A. No sir, there ain't any small grain this year on the whole farm.

Q. 59. How about the crop last year?

A. I never raised any last year.

Q. 60. The forests, how were they effected last year, did
317 you observe any smoke damage at all?

A. Yes sir, I believe last year was worse than this year.

Q. 61. How were the forests effected?

A. Looks like it has been bit down just like the other stuff it kills.

Q. 62. How do the leaves appear?

A. It looks like you had built a fire around it, pretty close to it, and the leaves was wilted from the fire.

Q. 63. That is the appearance of the forest?

A. Yes sir.

Q. 64. To what extent, or how much territory have you observed over there that has that appearance?

A. I ain't been out in the woods, but I have been in the fields and I have been around the other fellows there down in their plantations, and you can see right smart of effect. I haven't been up in the woods, but you can see it.

Q. 65. Do you mean by that that the leaves are discolored?

A. Yes sir, you can tell it way off yonder; it looks yellow.

Q. 66. Who was with you when you went to Copperhill?

A. Mr. Henry Smith.
Q. 67. He the gentleman that was here today and testified?
A. He is here; I reckon he has been in here.

Cross-examination by General FOWLER:

Q. 1. Whose land do you live on?
A. Dr. Chastain's.
Q. 2. How far from Morgantown?
A. About a mile; we claim it a mile.
Q. 3. You have been there two years?
A. Yes sir; made two crops.
Q. 4. Where did you move from there?
A. Cherry Log.
Q. 5. Whose land you on there?
A. I lived on Wedner's land part of the time; I stayed there two or three years, I suppose.
Q. 6. You don't own any land of your own?
A. No sir.
Q. 7. Did you ever own any?
A. Yes sir.
Q. 7. How long ago?
A. It has been twenty years.
Q. 8. Where was it?
A. Back on Board Town.
Q. 9. Did you receive anything for damages last year?
A. Yes sir, Mr. Chastain put in, I think, and he give me $5.75 or $6.75.
318 Q. 10. You got something last year?
A. He just give me that.
Q. 11. How much do you expect this year?
A. I ain't expecting anything.
Q. 12. Is Dr. Chastain going to put in any?
A. I don't know.
Q. 13. Ain't you going to try?
A. If I was, what little I would get wouldn't be worth a fellow's time fooling with it. What a fellow gets ain't nothing to what he is damaged.
Q. 14. If you are damaged so much why don't you get out and go somewhere else?
A. Because, I don't want to get out.

Mr. DRAKE: We except to the question and answer as irrelevant, and for the further reason that an American Citizen has a right to live wherever he pleases. Exception overruled. Appeal prayed and granted.

A. Yes sir, I have always lived where I pleased, and I am going to unless I am run out.
Q. 15. I am asking you the question, if you can't make any crops over there, why don't you go where you can make a crop?
A. Because I don't want to. We can raise anything we want to

there if it wasn't for that smoke, and we could *maise* it easy, and make it easier than you can most anywhere you go, but it looks like we are going to have to go whether we want to or not. I have traveled about a heap; I have been down in lot of the counties down below.

Q. 15. Out of Georgia?

A. Yes sir.

Q. 16. What states have you been in besides Georgia?

A. I have been in South Georgia.

Q. 17. What kind of land have you?

A. Pretty good land; as good average land as there are in this county.

Q. 18. How long has it been cleared?

A. I can't tell you that.

Q. 19. Do you know for how many years that land has been cleared?

A. No sir, but I suppose that it has been cleared for a long time.

Q. 20. It is worn out, isn't it.

A. No sir, it is as good average land as there are in Fannin
319 County; right along on that river there.

Q. 21. It is down on the river where you are?

A. Yes sir.

Q. 22. Where these fogs come down?

A. There ain't no logs come down.

Q. 23. I didn't say logs, I said fogs?

A. There ain't no fogs that hurts our stuff like this smoke.

Q. 24. What is the difference in appearance from these mountain fogs?

A. Sometimes it comes in there, and it smells mighty strong.

Q. 25. You can't tell the difference, can you?

A. You can tell a powerful difference when you can smell it and taste it.

Q. 26. Taste it?

A. Yes sir.

Q. 27. What does it taste like?

A. It tastes like, haven't you ever tasted this strong coal smoke on the trains?

Q. —. No, I don't eat coal?

A. If you have ever been around a train much you could taste it.

Q. 28. So you can taste this smoke?

A. Yes sir, you can taste that stuff.

Q. 29. You would know that smoke by the taste and the smell?

A. Yes sir; I know it whenever I smell it anywhere. I went to Rome, and passing down there there was some of that smoke and they was talking about it, and I says boys don't you know what that is; that's that old Copperhill Smoke, that's what it is."

Q. 30. And that was at Rome?

A. No sir, at Pine Log going to Rome.

Q. 31. That is in Pickens County.

A. Yes sir.

Q. 32. How far was that away?

A. Thirty or thirty-five miles.

Q. 33. So it is, you were way down in Pickens County on your way to Rome, and you smelled copper smoke?

A. Yes sir; it was there and I seed signs of it.

Q. 34. So it is, that down in Pickens County you saw signs of that smoke?

A. Yes sir; that smoke will go a hundred miles; it goes up and forward.

Q. 35. Didn't you see some of it in Rome?

A. No sir, I didn't.

Q. 37. Didn't smell it?

A. No sir, I never.

320 Q. 38. Didn't you think you did?

A. No sir, I never.

Q. 39. How far is it to Rome?

A. It's about 100 miles.

Q. 40. From what you say it would go there?

A. I suppose that it would.

Q. 41. Why didn't you smell it there?

A. Because I never smelled it.

Q. 42. Anyway you smelled it and saw its effects on the cotton in Pickens county, thirty-five miles away?

A. Yes sir; I seen that smoke right there on that cotton.

Q. 43. And you smelled the smoke?

A. Yes sir, it come right down there and settled in there.

Q. 44. Did you taste it in there?

A. I could smell it just like I smell it here, and I knowed it; you can breathe it and breathe it until you can taste it.

Q. 45. What was you doing when you smelled it down in Pickens?

A. I don't know that that's any of your business?

Q. 46. Tell me, whether it's my business or not?

A. I was going to Rome two or three years ago.

Q. 47. What month was it?

A. I don't know.

Q. 48. What season of the year was it?

A. It was the Fall season.

Q. 49. During the cotton season?

A. Yes sir, after the crops was laid by.

Q. 50. Three years ago?

A. I beleive it was year before last.

Q. 51. Two years ago, then?

A. Yes sir.

Q. 52. You were going to Rome and you smelled it?

A. Yes sir.

Q. 53. You are dead sure, as soon as you saw that cotton in Pickens County that it was exactly the same thing that you saw back there on your beans?

A. I saw the effect all right.

Q. 54. It was the same thing that you saw on your beans and potatoes and your corn, what you saw down there was the same thing

you had seen on your corn and your potatoes, and the timber around your place?

A. When I see smoke in one place and then see it in another I call it smoke, and it looked the same on the cotton as it would be here.

Q. 55. And you smelled the smoke there?

A. Yes sir; that cotton turned brown, and the smoke set-
321 tled down there, and I seed it was smoke and I knowed it and knowed what it was.

Q. 56. You say that has been in your place off and on this whole year, did you see it there in May?

A. Yes sir.

Q. 57. What dates?

A. I never kept no dates.

Q. 58. You can't tell a single date?

A. No sir, I never paid no attention to it; it was in there off and on all the time; a man working can't pay attention to dates; it's in there every time the wind is from the North.

Q. 59. Have any garden stuff bit in May?

A. Yes sir.

Q. 60. Scorch them?

A. Some time they would wilt down a little bit.

Q. 61. Did it, this year, scorch them?

A. Yes sir.

Q. 62. In there in June?

A. Yes sir, all along through June; along about the first of June.

Q. 63. Crisp up?

A. Yes sir.

Q. 64. Hurt them?

A. Yes sir.

Q. 65. Scorch your Irish potatoes?

A. Yes sir, the irish potatoes, nearly killed them.

Q. 66. Along in June?

A. Yes sir, along up in June.

Q. 67. The eighth and ninth of June?

A. I can't tell you.

Q. 68. Your irish potatoes were killed along up in June?

A. Some of them were; we planted at different times.

Q. 69. When did you plant your first irish potatoes?

A. I planted some potatoes in the full of the moon in March.

Q. 70. When did you plant your last ones?

A. I planted some along in April.

Q. 71. All of your potatoes up before June?

A. Some of them were up.

Q. 72. Wasn't all of them up?

A. Some of them were; I don't know whether they all were or not.

Q. 73. Does it take two months for potatoes to come up?

A. It's owing to the time you plant them.

322 Q. 74. Do you mean to say that any kind of potato wouldn't be up in that time?

A. You can plant some along the last of May, and they would come up in June.

Q. 75. How long does it take for potatoes to come up?

A. Two or three weeks; about two weeks generally; depends on the season, sorter.

Q. 76. So, all the potatoes you had were killed along the first of June?

A. They wasn't all killed, no sir.

Q. 77. But they were all scorched?

A. Scorched, but they wasn't all killed; sometimes it will scorch them, and they will come out and grow a while; it don't kill them all right down when it strikes them.

Q. 78. Did it scorch the woods all around there too, in June?

A. Yes sir, I could see signs of it in the woods there all along through June.

Q. 79. Did you see it in the middle of June?

A. I don't know whether it was or not; it was along in June.

Q. 80. You say it was there along in June, wasn't it in there the latter part of June?

A. I think that there was a space in there, along towards the end of June there wasn't much smoke?

Q. 81. Who told you that?

A. I know it; no man don't have to tell me. Any man with any sense can see it; and it comes in my field there.

Q. 82. Do you see everything that comes into your field?

A. No sir, I don't suppose that I have.

Q. 83. Then you say it come in there the first of July?

A. No sir, it come in there the third and fourth of July.

Q. 84. What day of the week was that?

A. I don't remember.

Q. 85. Wednesday?

A. No, I don't remember what day it was; it was the 3rd and 4th that it was in there.

Q. 86. And you can't tell what day of the week it was?

A. I don't know what day of the week it was.

Q. 87. Who told you the third and 4th of July, Mr. Vestal?

A. No sir he didn't.

323 Q. 88. Has Mr. Vestal been talking to you about this case; have you been talking with Mr. Vestal?

A. I spoke to Mr. Vestal a time or two.

Q. 89. When and where?

A. I spoke and he did.

Q. 90. Did you ever work for Mr. Vestal?

A. I barely know the man when I see him.

Q. 91. Now you said something about smoke coming in there the 3rd day of June, what time of day——

A. No sir, I never said it.

Q. 92. July?

A. Yes sir, on the 3rd of July.

Q. 93. What time of day was it?

A. About ten o'clock; along up in the morning about nine or ten o'clock.

Q. 94. Where were you?

A. I was at home.

Q. 95. You had caught your horses?

A. No sir, I hadn't; I went to feed my horses and then I eat dinner.

Q. 96. Prior to that time your garden had been bad bit, or about killed once or twice?

A. No sir, I said I saw the signs.

Q. 97. Didn't you swear a while ago that it had nearly killed all of your potatoes?

A. I said that it had scorched them. It will come in there and bite them, and then do it again, and maybe do it a dozen times, and then go on and you won't make but a few potatoes.

Q. 98. How long did you stay at home that day, the 3rd of July, after it come in there?

A. Until about eleven o'clock. I left home about eleven o'clock

Q. 99. And it come in there at ten o'clock?

A. Some time about ten or eleven o'clock.

Q. 100. And you left when?

A. Sometime about eleven or twelve o'clock.

Q. 101. And when you left, you left it in there?

A. Yes sir, it was in there when I left.

Q. 102. And you were gone until the next day?

A. Yes sir, I got back the next day.

Q. 103. On the fourth of July?

A. Yes sir.

324 Q. 104. You don't know the day of the week?

A. No sir.

Q. 105. Where had you been?

A. To Ducktown.

Q. 105. What were you doing there?

A. I went down with Mr. Henry Smith.

Q. 106. That the Mr. Smith that was in here this morning?

A. Yes sir.

Q. 107. And you didn't get back until the next day, what were you doing in Ducktown?

A. I hadn't been doing anything.

Q. 108. You didn't go in to celebrate or anything like that?

A. No sir; we started home the next morning early. There was a picnic there that day, but I didn't stay for that.

Q. 109. Was it in there 5th and sixth of July?

A. There was a few days that I didn't notice it; I noticed for several days that it was in there off and on, but I never paid no attention to it. I noticed that it was pretty like for a few days, and then I would see the smoke in there off and on.

Q. 110. Your crops were destroyed mostly before that?

A. I didn't say destroyed; I said they was hurt; that I had seen signs of it.

Q. 111. What do you mean by sign?

A. I seen smoke in there all along.
Q. 112. I am talking about in June?
A. I told you that I saw smoke all along in June.
Q. 113. You testified that it burnt your potatoes in June?
A. Yes sir, it scorches the potatoes and the woods every time it comes in there; and then it might come in tomorrow and scorch another place; maybe one place it wouldn't hurt today.
Q. 114. I believe you said that that smoke was in there on the 3rd day of June and that you left it in there?
A. I never said it. I said the 3rd day of July.
Q. 115. I mean the 3rd day of July; that smoke come in there about ten o'clock, and when you left it was still there?
A. Yes sir; I left about eleven or twelve o'clock.
Q. 116. I believe you said that it scorched your potatoes that time?
A. Yes sir the leaves, and the weeds, they was wilting be-
325 fore I left.
Q. 117. It hit hard, and they tumbled over right there?
A. Yes sir; it hurts when it hits.
Q. 118. You have seen the same thing done by frost, haven't you?
A. Yes sir.

Redirect examination by Mr. DRAKE:

Q. 1. You have been asked about fogs here in that river country and in the mountains, you don't have fogs on bright sun-shiny days, do you?
A. No sir.
Q. 2. You do have this smoke that looks like a fog when the sun is shining?
A. Yes sir.
Q 3. On the third day of July, was the sun shining?
A. Yes sir, I think it was clear.
Q. 4. The sun has a tendency to dispel the fogs and scatter them, don't it?
A. Yes sir.

Mileage of witness: 10 Miles.

W. M. BARNES, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. HILL:

Q. 1. How old are you Mr. Barnes?
A. I am about fifty-six.
Q. 2. Where do you live?
A. Right over towards Fightin' Town; towards the Blue Ridge Northwest from here, about t-elve miles.
Q. 3. Near what Post Office?
A. Oasis.
Q. 4. How long have you been living there Mr. Barnes?

A. All of my life, except I was away for seven years.
Q. 5. Do you farm there?
A. Yes sir, I have been over there over twenty years.
Q. 6. Do you know about the timber around in that section?
A. Yes sir.
Q. 7. Have you been around the Tennessee Copper Company plant and the Ducktown plant?
A. Yes sir.
326 Q. 8. Have you ever smelled that smoke over there?
A. Yes sir.
Q. 9. Have you ever seen that smoke around your place?
A. Yes sir.
Q. 10. Did it smell like the smoke at those plants?
A. Yes sir.
Q. 11. Like the smell of the smoke up around Ducktown?
A. Yes sir.
Q. 12. How many times have you seen it in there?
A. I couldn't tell you.
Q. 13. For how many years have you seen it in there?
A. For twenty years off and on.
Q. 14. Do you live near Barnes Mountain?
A. Right at the foot of what they call Barnes Mountain.
Q. 15. Have you seen the smoke on the mountain any time through there?
A. Yes sir.
Q. 16. State whether or not you have looked at the timber at any time right after the smoke had been in there?
A. Yes sir, a few days afterwards; after it comes I have looked, and you can see a little effect in two or three days.
Q. 17. How would it look?
A. There in some places it looked sorter like the frost had bit it; the leaves was parched and crisped, and some falling off.
Q. 18. Have you seen that smoke in there this year?
A. Pretty near every day through May.
Q. 19. Out in the section where the timber is too?
A. Yes sir.
Q. 20. State whether or not you have seen the leaves off the trees on the ground?
A. Yes sir.
Q. 21. Is this the time of the year for them to come off?
A. No sir.
Q. 22. What trees over there Mr. Barnes, what sort of the trees did you see effected that way?
A. Several different kinds of the oak; Spanish Oak; Post Oak; Black Oak; some few white pines and the locust.
Q. 23. Are all of the different varieties of the timber damaged or not?
A. Everything on the South side of the Mountain is damaged; everything without it was the locust; I don't know for certain whether that was damaged or not.

327 Q. 24. Did you notice the timber last year?
A. Yes, sir.
Q. 25. What was the condition of the timber last year?
A. On this mountain we are talking about, I didn't see so much in there.
Q. 26. What about over your section generally?
A. It was bad, but not as bad as it has been this year.
Q. 27. Do you raise and beans and peas and corn?
A. Yes, sir.
Q. 28. Have you ever seen any smoke on them?
A. Yes, sir.
Q. 29. Have you noticed them after the smoke left?
A. Yes, sir.
Q. 30. What effect does it have on them?
A. It burns the corn like frost bite.
Q. 31. Did it bite your corn this year?
A. Yes, sir; sometimes it kills the tassels all at once.
Q. 32. Have you seen the smoke in there at various times during this year?
A. Back in May, and along the first of June, it was in there pretty near all the time.
Q. 33. What about last year, 1913, do you remember any day that you saw it in there then?
A. I seen it where it killed the peas on the 12th of May, 1913.
Q. 34. How do you fix that day?
A. I put it down.
Q. 35. What caused you to put it down?
A. A gentleman asked me to go and see his garden, it was well fertilized; they wasn't doing so well, and he asked me what was the matter——
Q. 36. Just tell what you saw there?
A. I saw the peas was killed there.
Q. 37. Did you see any corn?
A. He had some corn, but I wasn't in the corn.
Q. 38. Whose garden was that?
A. Mr. John Vestal's.
Q. 39. That Mr. J. T. Vestal?
A. No, sir, his son.
Q. 40. You put that date down?
A. Yes, sir.
Q. 41. What was the appearance of the peas that you examined?
A. They was folded over and drooped over; kinder blackish and crimped up.
328 Q. 42. From your experience as a farmer and gardner, what do you think effected those peas?
A. Smoke; in fact I knowed it was.
Q. 43. Those field peas or garden peas?
A. Garden peas.
Q. 44. Going back to the timber, about what percentage of the timber around your place is damaged?

A. The timber there up on that mountain where I live, I think 50% of it is injured.
Q. 45. How about towards Higdon's store?
A. It was scorched, but not as bad as where I live.

It is agreed by and between counsel for the State and for the defendant that the witness lives eight and a half miles from Copperhill and ten and three-quarter-miles from Isabella.

Cross-examination by General FOWLER:

Q. 1. You live on the top of the mountain?
A. No, sir, to the left of it rather.
Q. 2. At the foot?
A. Yes, sir, at the foot.

Redirect examination by Mr. HILL:

Q. 1. From where you live there can you see the stacks of the plants?
A. You can from the mountain, a quarter of a mile walk up to the top from my house, you can see both.

Recross-examination by General FOWLER:

Q. 1. How long have you lived there?
A. I was born and raised within a mile of there, and have been living there for twenty years.
Q. 2. How long have you been seeing smoke in there?
A. For about twenty years.
Q. 3. Do you remember when they roasted the ore?
A. Yes, sir, I remember when they roasted the ore, but I don't remember the dates.
Q. 4. Did it come in there at that time?
A. Yes, sir, it come in some; I have seen about as much before as since.
329 Q. 5. Really, you haven't been damaged much in there until the last four or five years?
A. Yes, sir, we have been damaged longer than that.
Q. 6. Five or six years?
A. Longer than that, I can't say how much, but longer back than that.
Q. 7. In 1913, you had a very cold spell in June, didn't you?
A. No, sir, not at my house.
Q. 8. Didn't you about the 9th or 10th of June, have a frost?
A. No, sir, we never.
Q. 9. You swear that you didn't have a frost?
A. Not in my settlement.
Q. 10. Wasn't it very cold on the 9th of June?
A. Not where I live, nor in my settlement, I never seen any frost in my settlement in June in my life.
Q. 11. How much land do you own?

A. I own something like 1600 acres.
Q. 12. How much in cultivation?
A. I don't know.
Q. 13. How long have you owned that land?
A. Where I live, not more than eight years.
Q. 14. Got half of it in Cultivation?
A. No.
Q. 15. Thirty acres?
A. You mean in corn?
Q. 16. In everything?
A. I guess about twenty acres.
Q. 17. When was it cleared?
A. I can't tell you; it was cleared when I bought it, before I owned it.
Q. 18. That is worn out now and gone, isn't it?
A. No, sir, I manure it good.
Q. 19. You raise good crops of corn?
A. Reasonably good corn, by manuring and fertilizing it.
Q. —. What kind of land is it?
A. It is good upland, on the North side of the mountain.
Q. 20. What do you cultivate that upland in; corn?
A. Some of it.
Q. 21. How long has that been in cultivation?
A. Not very long.
Q. 22. That upland wears out pretty quickly doesn't it?
A. No, sir, not as much as you would think.
330 Q. 23. Have you been cultivating that mountain land every year?
A. No, sir; some of it every year, but I let it lay out.
Q. 24. Does the timber die from any other causes than smoke?
A. I can't tell.
Q. 25. Haven't you know- of timber dying in there before any smoke ever come in there?
A. I have known it to die, but not half as much timber; it naturally dies anywhere.
Q. 26. Do you know anything about the diseases of timber?
A. Not much.
Q. 27. You don't know that diseases of timber are developing every year?
A. No, sir, I don't know it. I know that since the smoke come in there that it has been a heap worse.
Q. 28. Don't you know and haven't you been where there is no smoke and found it worse than it is where you are?
A. No, sir.
Q. 29. You haven't been in many countries and look at the timber?
A. No, sir, not very many; about fourteen different states.
Q. 30. If you were to go to a place where they have more dead timber than you have in there—if you were to go where there was no smoke and should find more dead timber than you have in there, you of course wouldn't attribute that to smoke?

A. If there was any plants in there I would; I haven't never been to no place where there is more.

Q. 32. You have been lo-king for dead timber haven't you?

A. No sir, but a fellow can't help but see it.

Q. 33. When you were traveling, were you looking for timber?

A. No sir, but I would see it. I ain't never been in no country where there is as much dead timber as there is in this section.

Q. 34. Had it been cut over or not?

A. No sir.

Q. 35. What kind of timber is dead?

A. All kinds.

Q. 36. Dead oak?

A. Yes sir.

Q. 37. How many dead oak trees?

A. I couldn't tell you how many.

Q. 38. You have forest fires on your land?

A. No sir; no more than the leaves burn.

331 Q. 39. Don't the leaves burning, burn out the underbrush?

A. No sir; they don't burn until fall and that don't kill it.

Q. 40. Ever cut any of the timber off of your land?

A. Nothing only fire wood.

Q. 41. Cut it for sale?

A. Yes sir, several years ago.

Q. 42. Ever sell any of the timber?

A. Yes sir, a little to Mr. Vestal.

Q. 43. How much did you sell Mr. Vestal?

A. No- much.

Q. 44. He did cut that?

A. Yes sir, of course he cut what I sold him.

Q. 45. What kind did you sell him?

A. Some poplar and some oak.

Q. 46. How much did you sell him?

A. I don't remember just how much.

Q. 47. Did you sell any chestnut?

A. No sir.

Q. 48. Sell any white pine?

A. Nothing but poplar and a little oak.

Q. 49. How many years has that been?

A. I can't tell you.

Q. 50. Five or six years ago?

A. Longer than that; it has been over ten years.

Q. 51. He left the laps lying in the woods?

A. Sure.

Q. 52. Didn't that burn?

A. No, some of the cuts are in there yet; rotten.

Q. 53. Any fires gone through there since that?

A. There have on the South side; there haven't been any on the North side.

Q. 54. What is the reason?

A. I have never saw it dry enough, winter or summer.

Q. 55. Anyway, you don't know whether that timber died from smoke or disease?

A. Yes I do; I know that it's the smoke.

Q. 56. How do you know it?

A. From the looks of it after I seen it come in there.

Q. 57. That's all a guess isn't it?

A. No sir.

Q. 58. You saw the smoke there?

A. Yes sir, and I saw the dead leaves.

Q. 59. There was dead timber before there ever was any smoke in that country?

A. Yes sir; some dead timber.

Q. 60. That didn't die from the smoke?

A. That was before the smoke ever started.

332 Q. 61. And the smoke didn't kill that?

A. No sir, I reckon that died from natural causes.

Q. 62. What are the natural causes?

A. Worms, I suppose; I can't tell you.

Q. 62. Although you are willing to swear that all that died from the smoke?

A. No sir.

Q. 63. When a man points out a tree to you and you see that tree is dead, and you don't know what killed that tree, you think it is the smoke?

A, I have got to know if I say; if I don't see no leaves burned and no leaves falling off, I wouldn't know.

Q. 64. How do the worms effect a tree?

A. The worms don't cut it all at once.

Q. 65. The worms might have been working on the tree like the smoke; it takes several applications to kill the tree don't it?

A. That's owing to the health of the tree, and what kind of tree.

Q. 66. Don't you know that there are trees in your forest that have been burned time and again and are still living?

A. It don't kill it the first application; I don't know how many it takes.

Q. 67. It takes a great deal of smoke, don't it?

A. I have seed lots die inside of three years.

Q. 68. Haven't you seen trees die inside of three years from worms?

A. I don't know anything about the worms.

Q. 69. So it is that you don't know anything about the habits of worms?

A. No sir.

Q. 70. The fact is, you don't know one thing about the diseases of forests, do you?

A. I don't know nothing much about it; I know that worms cut the trees.

Q. 71. You think that smoke killed all of that timber?

A. I don't think it killed all of it, but a majority of it.

Q. 72. You have had your gardens nipped a few times?

A. Yes sir, several times.

333 Q. 73. When?

A. For eighteen years back; 'long back eighteen years ago.

Q. 74. That nipped by frost?

A. No sir, I never had my garden stuff nipped by frost but a few times.

Q. 75. You don't plant your garden very early do you?

A. No sir.

Q. 76. When was it that you- garden was nipped last year?

A. I had peas killed, corn-field peas, cabbage and peas hurt worst from the 5th of May up until the 10th of May last year.

Q. 77. How much did you get for that, how much did this arbitration board give you for that?

A. Last year?

Q. 78. Yes?

A. Thirty dollars.

Q. 79. For those peas damaged in May?

A. I give in all of the damage that was done.

Q. 80. Did you put that in, put your peas in that was damaged in May?

A. I don't remember.

Q. 81. How many peas did you have?

A. Seven acres.

Q. 82. Sowed or planted?

A. Planted.

Q. 83. Between the corn?

A. Yes sir.

Q. 84. When did you plant your field peas out there?

A. I planted my corn field, and whenever I planted my corn, I planted my peas; I plant sometimes in April and from that on up until the 10th of May.

Q. 85. How many peas did you get off that seven acres?

A. Two and one-half bushels.

Q. 86. You really don't know what it was that hurt your peas?

A. Yes sir, I think it was the smoke; I knowed it.

Q. 87. You just know it?

A. Yes sir.

Q. 88. You just know that nothing will hurt up in your neighborhood except the smoke?

A. It had been in there before that, and if there wasn't no frost there wasn't nothing else to hurt it but the smoke.

Q. 89. They are the only diseases that you know of that will hurt peas?

A. All I know of.

334 Q. 90. How many other diseases that will hurt your peas you don't know?

A. No sir.

Q. 91. You say that you saw some other fellow's pea patch bit there on May 13th?

A. May 12th.

Q. —. That Mr. Vestal's?

A. Yes sir.
Q. 93. You looked at that?
A. Yes sir.
Q. 94. That looked kinder frost bitten?
A. It looked sorter like frost bit, but I never seen any garden peas frost bit; not garden peas.
Q. 95. Frost can't bite them?
A. I don't say it can't; I never seen any.
Q. 96. Nothing can bite a garden pea but the smoke?
A. I never seen any bit only by that.
Q. 97. What was their condition?
A. The leaves was black and falling over; twisted up and brown.
Q. 98. You can't tell how long before they blacked and crisped up and turned over?
A. I don't think over two days.
Q. 99. I am not asking you what you think?
A. Well, I see'd them on the 12th and they was black and twisted up.
Q. 100. You didn't see them before the 12th?
A. No sir.
Q. 101. Where were they?
A. There at Epworth.
Q. —. That Mr. Vestal a son of Mr. John Vestal?
A. Yes sir.
Q. 103. Did you ever work for Mr. Vestal?
A. No sir; I have hauled a little lumber for him, but very little.
Q. 104. Mr. Vestal talked to you about this matter?
A. No sir.
Q. 105. Didn't he get you to come here as a witness?
A. No sir.
Q. 106. How much damage do you expect to get this year?
A. I don't know; to give a rough estimate I would say four or five dollars.
Q. 107. How much are you claiming?
A. I placed it at $67.00.
Q. 108. How much did you claim last year?
A. Sixty Dollars.
Q. —. How much did you get?
A. Thirty.
Q. 110. Has this board of arbitration looked over your place this year?
335 A. They come there, but they didn't look it over.
Q. 111. When were they there?
A. I think it was back in May some time when they were there.
Q. 112. This year?
A. Yes sir, but they didn't look it over; they walked out in the field a little ways, about 100 yards.
Q. 113. You don't think they tried?
A. I told them to look up on that mountain, and they looked up there and see'd dead timber.

Q. 114. You told them that it was dead?
A. I did, but they didn't go up there; they could see it from where we was at, but it didn't show as plain as it did up there.
Q. 115. Any way you showed them the timber?
A. Yes sir, at the distance.
Q. 116. They looked at it?
A. Yes sir.
Q. 117. They haven't allowed you anything yet?
A. No sir, not yet, and they didn't say whether they would; I didn't put in for any more than I did last year, and I 'lowed I would get about fo-r or five dollars, and that will help a fellow along, won't it, four or five dollars.

Redirect examination by Mr. DRAKE:

Q. 1. Last year, when did they come around?
A. It was nearly Christmas.
Q. 2. They just have so much money to divide around?
A. Yes sir.

Mileage of witness: 24 miles.

B. H. SEBOLT, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. How old are you Mr. Sebolt?
A. Going on seventy-eight years old; if I live until next Christmas I will be seventy-eight.
Q. 2. Where do you live?
A. I live over here about three miles from here.
Q. 3. Near what mountain?
A. The main top of the Blue Ridge runs out there in this direction (indicating), and makes a turn in that way (indicating).
336 Q. 4. How far from Bushy Head mountain?
A. Let me see; it is something like a mile and a half side.
Q. 5. How far from Chestnut gap?
A. Back into the left of there, a little South sir.
Q. 6. On Fightin' Town Creek?
A. No sir, on Sugar Creek; near the headwaters of Sugar Creek.

It is agreed by and between counsel for the State and defendant that the witness lives eight miles from Copperhill and ten and a quarter miles from Isabella.

Q. 7. How long have you been living in that neighborhood?
A. Forty-three or four years.
Q. 8. You are a farmer?
A. Yes sir.
Q. 9. How much land do you own?
A. One Hundred and Ten acres.
Q. 10. Have you seen any smoke in that neighborhood the last few years, sulphur smoke?

A. Yes sir, I have seen it in there for the last ten or fifteen years.

Q. 11. To what extent did you see it in there in 1913, and did you observe any damage?

A. Yes sir, it done a great deal of damage?

Q. 12. What kind of crops did you have in there last year?

A. Very sorry, on account of the smoke damage.

Q. 13. What did you have planted, what kind of crops?

A. We had peas, beans, potatoes, cabbage, and all kind- of garden stuff; and corn.

Q. 14. Did you observe any damage on corn, and if so to what extent?

A. Very bad; I couldn't tell how bad.

Q. 15. How did it effect it?

A. It parched up the blades; and dried up and killed the tassels and the silk. Maybe the silk would be looking fresh and all right and the next day it would be dead. The corn would silk out and look green and fresh and all right, and then next morning it would be down dead.

Q. 16. What would cause it to go down that way?

A. Smoke.

337 Q. 17. Did you see that smoke?

A. Yes sir.

Q. 18. Could you smell it?

A. Yes sir.

Q. 19. When you would see that smoke in there, how long would it be before you could observe its effects?

A. If it was sunshiny and it would come down in there, by twelve o'clock the next day it would show up distinctly.

Q. 20. How would it effect your garden truck?

A. It would parch it up like frost. I will tell you how it does; you take fire and hold it close to it, and it would draw it up and turn it a sorter brown color like fire would, if you hold it close to the stuff.

Q. 21. Did you see that in 1913?

A. Yes sir, a plenty.

Q. 22. In 1914, have you seen smoke in there?

A. Yes sir.

Q. 23. Did you see any of it in there in May?

A. Yes sir. The first I paid any attention to it in May was the 7th.

Q. 24. Did you notice any other dates in May, that you remember?

A. I think that it was the 10th and 11th that it was in there again.

Q. 25. Did you see any of it in June?

A. Yes sir, it come down in there on the 14th of June. It would usually be two or three days that it would come down if the wind stayed in a certain direction.

Q. 26. From what direction would be the wind when that smoke came in there?

A. Mostly a Northeast direction; not exactly North.

Q. 27. When the wind is from the Northeast it comes into your neighborhood?

A. Yes sir; it comes up a little creek there and settles down on the fields.

Q. —. Go ahead about the dates, is there any other dates?

A. Yes sir.

Q. 29. Did you see it in there in July?

A. Yes sir; the second, third, fourth, fifth and sixth it was in there to some extent; it was bad on the 3rd and 4th; I could tell that it come down on the Second of July.

Q. 30. You say that you could tell it; do you mean by that that you could see it?

A. Yes sir; anybody can tell that smoke.

338 Q. 31. Could you see it and smell it on the 2nd, 3rd, 4th and 5th and to some extent on the 6th?

A. Yes sir.

Q. 32. Did you observe any of the effects of that on the growing vegetation during that time?

A. Yes sir; I could see it. I haven't been away from home this summer; all the morning it come in there, and the young and tender sprouts I could see by the evening of the second day that they was turned red and kinder kinked up; the sprouts would keep growing and coming back, and the smoke would come back and parch it; they would grow a little and maybe the next time it would kill them, and if a man don't think I am telling the truth about it he can go and see.

Q. 33. Just tell what you saw, Mr. Sebolt, if you have been up on the mountains this year and have seen the smoke coming out of these plants, tell what day it was and how come you to go up there?

A. I went up there one Sunday evening——

Q. 34. What day was that?

A. It was July 5th I went up on the mountain. I met up with Mr. Trammel and I went on up on the mountain into his orchard. The leaves was all kinked up and dried up, and while I was up there on the 5th day of July, I saw the smoke coming out of that stack, but it wasn't the main stack, the big stack there, it was out of some of them stacks, but it didn't boil out like it does out of that big stack.

Q. 35. You have been up there and have seen it before?

A. Yes sir; I have seen it ever since they have been running.

Q. 36. The big stack wasn't running that day?

A. No sir.

Q. 37. Where did that smoke go?

A. It come right through this county and scattered every way.

Q. 38. See any close to you?

A. Yes sir, all around me down in the creek.

Q. 39. Did you smell it?

A. Yes sir.

Q. 40. Did you observe the effects of that smoke soon thereafter on the timber?

A. Yes sir, I discovered plenty of it that way.

Q. 41. Describe how the forest trees generally, in your neighborhood are effected by that smoke?

339 A. You can stand at my place there and count several dead trees that died this year; it is the heaviest on the chestnut and on the young undergrowth; it will parch up the young undergrowth.

Q. 42. Have you observed it on the oaks, if so what kind?

A. It has the worst effect on the black oak and Spanish oak; it is bad on the black oak timber and the apple trees and all kinds of fruit trees.

Q. 43. I am speaking of the forest trees?

A. The chestnut and the oak, and most all kinds of trees there.

Q. 44. How was it last year?

A. It was bad last year; killed some trees in there.

Cross-examination by General FOWLER:

Q. 1. I believe you stated, Mr. Sebolt, that if the smoke came down one day, you could see the effects of it the next day?

A. Yes sir.

Q. 2. It took from six to eight hours to develop?

A. Yes sir.

Q. 3. Would the sun have to shine out before or after?

A. It would have to shine out before you could tell the effects.

Q. 4. That is, it would have to be on the foliage some five or six hours to get started?

A. Yes sir, of course. I have been watching the thing a good while, and when it hurts the worse, and when we have had a shower of rain and the smoke comes in it settles down heavy; it will come in and settle down heavy and look like a fog, and when that dries off you can see the damage.

Q. 5. When it comes in there and blows right on, you don't see so much effect; it doesn't hurt as much?

A. No sir.

Q. 6. When there is moisture in the atmosphere is when it hurts the worst?

A. Yes sir.

Q. 7. I believe you said that it was in there on the second of July, or the first of July?

A. Yes sir, and on the 4th and 5th.

Q. 8. And on the 6th?

A. Yes sir; to some extent.

Q. 9. How about the 7th?

A. I don't know that I noticed it on the 7th.

340 Q. 10. None on the 8th?

A. I can't tell much on the 8th.

Q. 11. These dates that you were speaking about; the wind was blowing, was it?

A. Blowing to some extent; it wasn't blowing there all the time; it seemed like it would kinder blow during the morning and stop like, and then the smoke would settle in on the creek.

Q. 12. It was Sunday I believe you said that you looked over towards Ducktown?

A. Yes sir.
Q. 13. How high a point was you looking from?
A. I don't know.
Q. 14. How far was your house East of it?
A. Well sir, the house is something like half a mile.
Q. 15. Higher than your house?
A. Yes sir.
Q. 16. You couldn't see any of the stacks from where you were?
A. I could see the smoke boiling up.
Q. 17. But you couldn't see the stacks?
A. No sir, I couldn't see the stacks.
Q. 18. You couldn't see that big stack could you?
A. I could see close to the top of it.
Q. 19. How close could you see to the top of it?
A. I don't know sir.
Q. 20. There are some copper mines there as well as furnaces around there, aren't there?
A. Around where?
Q. 21. Over at Copperhill and Ducktown and between them; there are mines as well as furnaces?
A. I don't know; I reckon there are.
Q. 22. Do you know where they get the copper?
A. They get the ore out of the mines.
Q. 23. Don't they have stacks at these mines?
A. Yes sir, I reckon they do; I guess they have engines where they draw it out.
Q. 24. They have stacks at the power plants at the furnaces too, don't they?
A. Yes sir.
Q. 25. And smoke comes out of those?
A. Yes sir, of course.
Q. 26. You were looking over towards Copperhill and Isabella, that is, the basin.
A. Yes sir.
341 Q. 27. And you saw smoke coming out of that basin?
A. Yes sir, coming out of the basin.
Q. 28. That is all you can say about it, isn't it?
A. I could tell that it was coming out of the stacks.
Q. 29. The smoke boils up regardless of what it comes out of, don't it?
A. It makes a difference as to what color it is.
Q. 30. Isn't that smoke the same color as a fog?
A. No sir.
Q. 31. You never saw any fog anything like that smoke?
A. It is bluer than fog is.
Q. 32. Is the smoke that comes out of those other stacks the color of fog?
A. No sir, it's right dark. Didn't you never see smoke?
Q. 33. Do you know whether they fire with coal or not?
A. They do for their engines.
Q. 34. Do you know that?

A. Yes sir.
Q. 35. Did you ever work there?
A. Yes sir.
Q. 36. When did you work there?
A. Six or seven years ago.
Q. 37. Who for?
A. The Tennessee Copper Company.
Q. 37. How long did you work for them?
A. I don't know; I never kept no account of the dates.
Q. 38. Did you ever taste that smoke?
A. Yes sir, wouldn't any man taste it if he had it in his mouth.
Q. 39. You tasted it and smelled it too?
A. Yes sir.
Q. 40. I believe you say that you saw smoke in there in May, 1914, this present year?
A. Yes sir.
Q. 41. Did that scorch anything?
A. Yes sir.
Q. 42. Scorch your beans?
A. Yes sir, beans, peas and taters.
Q. 43. About killed it?
A. It ruined my tater crop.
Q. 44. Did it come over there in June?
A. Yes sir.
Q. 45. What days?
A. I can't tell you exactly; it was along in June several days.
Q. 46. Don't you know a single day that it came in there in June?
342 A. It come over there I suppose, it was the 10th of June; I have got it down on the almanac at home; whenever it come in there I put it down on the almanac.
Q. 47. So it is, that you can't remember a single day in June when it was there?
A. No sir, I can't say positively.
Q. 48. Was it there on the 25th of June?
A. Seems like it was about that time; the 20th or the 25th.
Q. 49. And the 26th of June, wasn't it the 25th and the 26th of June that it was in there?
A. Might have been, I can't tell you.
Q. 50. What is your recollection?
A. As well as I recollect it was about that time; I kept particular account of it after that in July; I commenced to put it down in July on this here piece of paper.
Q. 51. Didn't you put it down in June?
A. Not here; I have got it at home.
Q. 52. But you think you saw it the 25th or the 26th of June?
A. Something about that time.
Q. 53. Was it there the first of June?
A. It was there several times in June.
Q. 54. Scorch anything during that time?
A. Yes sir.

Q. 55. Pretty badly?
A. Yes sir.
Q. 56. About killed everything?
A. No sir, not killed down; they would take a start and grow again.
Q. 57. Take a start again in a day or two?
A. Yes sir, they would take a start again.
Q. 59. Been killed down a dozen times and grow again?
A. No sir, not that many times.
Q. 60. How often?
A. It might have been four or five.
Q. 61. It had been kicked down about the 25th or 26th of June, before it came in there on this second, third, fourth and fifth of July?
A. I can't say now. I remember I spoke to my son about it about the 29th or 30th, and told him that it was the worst I had seed in years.
Q. 62. That was on the 29th of June?
A. Yes sir.
343 Q. 63. And it was about the 25th or 26th of June that it was in there?
A. I don't think it was further off than that; might have been the 20th; not more than the 20th, as well as I recollect.
Q. 64. Along the first of June, the 8th, 9th and 10th, any in there then?
A. Yes sir.
Q. 65. That scorch anything?
A. You could see the effects; it parched things up.
Q. 66. Every time it came in there you could see the effects?
A. Yes sir.
Q. 67. You never saw a single time that you couldn't see the effects?
A. No, every day that it came in there you could see the effects of it; it still does.
Q. 68. Was it in there last year?
A. Yes sir.
Q. 69. Same way?
A. Yes sir, from the first of the year on.
Q. 70. How much did it damage you then?
A. Nothing worth anything.
Q. 71. How much?
A. Ten Dollars.
Q. 72. How much were you damaged?
A. I claimed $200.00.
Q. 73. How much have you been damaged this year?
A. I don't know; I wouldn't take $100.00 for it.
Q. 74. How much have you filed a claim for?
A. I don't recollect; I didn't file my claim up until now; I filed it back in the summer.
Q. 75. When did you file your claim?
A. On the 24th of June.

Q. 76. How much did you claim that you were damaged up until the 24th of June?
A. About Seventy-five dollars, I suppose.
Q. 77. They haven't awarded you anything yet?
A. Not one cent.
Q. 78. Did they come out and inspect your garden?
A. No sir.
Q. 79. They have never seen your crop or anything like that?
A. No, they never have done anything to it.
Q. 80. You are expecting them to?
A. I don't know whether they are going to do anything or not. I haven't go- no expectation of it.
Q. 81. I believe you said that you saw the effect *on* this smoke on the sprouts?
A. Yes sir; I have noticed it on the sprouts is one special
344 thing I noticed; and then I saw the effects on my garden saw the effects on my garden right there at it.

Mileage of witness: Eight Miles.

W. T. ANGEL, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. Where do you live?
A. I live between here and Copperhill, near Mr. Vestal's; a mile and a half this side of Epworth.
Q. 2. Which way?
A. East.
Q. 3. How long have you been living there?
A. Right there at that place, four years.
Q. 4. Have you seen any smoke in there this year?
A. Yes sir.
Q. 5. Do you know what it is when you see it, can you smell it?
A. Yes sir.
Q. 6. What times this year have you seen it in there?
A. I saw it there along in June and in May, when it damaged me some, but the smoke I saw last and paid attention to was the 3rd and 4th of July.
Q. —. How bad was it on the 3rd and 4th of July—could you see it?
A. Yes sir, and taste it.
Q. 8. Smell it?
A. Yes sir.
Q. 9. What effects of it did you see on your garden stuff?
A. I saw it ruined my beans and stuff.
Q. 10. How?
A. It bit them and ruined them.
Q. 11. How did they look?
A. Looked right brown.
Q. 12. Did you have any irish potatoes?
A. Yes sir.

Q. 13. Did it bite them?
A. Yes sir, and my sweet potatoes too.
Q. 14. How did it effect your irish potatoes when it bit them?
A. The leaves turned right brown and fell off.
Q. 15. Did you have any corn?
A. Yes, sir, eighteen acres.
345 Q. —. Did you see any effects of it on your corn?
A. Yes sir.
Q. 17. How did it effect your corn?
A. It would turn right white and then brown.
Q. 18. The blades of it?
A. Yes sir.
Q. 19. How did it do the tassels and the silk?
A. They looked just like they had been burned and fell off.
Q. 20. Have you seen the effect on the trees, where it bit the trees and leaves around there?
A. Yes sir bit the leaves too, and they would fall of-.
Q. 21. How far are you this side of Copperhill, do you suppose?
A. They count it three or four miles, the best I recollect.
Q. 22. On which side of Tocoa River, West or East?
A. West side.
Q. 23. You are in Fannin County?
A. Sure.

Cross-examination by General FOWLER:

Q. 1. You saw smoke in there in May of this year?
A. Yes sir.
Q. 2. What dates?
A. I can't recollect the dates it was in there; I never kept any record of it.
Q. 3. Why didn't you?
A. Because I wasn't looking for it as much then as I now do.
Q. 4. Can't you tell a single day in May that it was in there?
A. Along about the first and second of May.
Q. 5. Third and Fourth?
A. Yes sir, somewhere along there. We had it in there in May off and on a right smart.
Q. 6. Was it bad in there then?
A. Yes sir, it done same damage.
Q. 7. There in June?
A. Yes sir.
Q. —. First of June?
A. Yes sir.
Q. 9. 5th of June?
A. Yes sir, along up in there.
Q. 10. Eighth and ninth?
A. I don't know about that.
Q. 11. The fifteenth of June?
A. I think it was along about the fifteenth.
Q. 12. Twenty-fifth day of June?

A. I wouldn't say about that.
346 Q. 13. Twenty-seventh?
A. I don't know.
Q. 14. What about the 29th of June?
A. I don't think any was down there that day.
Q. 15. How was it with your neighbors on the 29th, do anything to them?
A. I heard some complaint about it.
Q. 16. Which one of your neighbors was it?
A. A man I rent from, Harvey Cochran.
Q. 17. What was it that he said that it did to him on the 29th?
A. He said that it was down on his timber and all over his stuff.
Q. 18. Which timber of his did it get in on the 29th?
A. His apple trees; he had apples, and I think all over his field.
Q. 19. He claimed that was done on the 29th?
A. Somewhere along there.
Q. 20. The 29th or not, or the 28th?
A. I don't know about that.
Q. 21. On the first of July, did you see it?
A. The first?
Q. 22. Yes?
A. It was on the 3rd and 4th I saw it in there.
Q. 23. Didn't it do something on the second of July?
A. Not that I know of; it was the 3rd and 4th I paid attention to it.
Q. 24. Why?
A. Because it ruined my stuff?
Q. 25. That was back in May wasn't it?
A. It did sorter come over then.
Q. 26. Killed it again in June, didn't it?
A. It did off and on all along.
Q. 27. If it killed your stuff in May, why didn't you give attention to that?
A. I have give attention to it; I have put in an account for that a long time ago.
Q. 28. Have you put in any for June?
A. No sir.
Q. 29. Do you intend to?
A. I ought to.
Q. 30. Do you intend to?
A. I don't know whether I do or not.
Q. 31. Why don't you?
A. I say that I ought to; I don't know whether I will or not.
Q. 32. You intend to put in for July?
A. Yes sir, a body ought to do that.
Q. 33. Then you intend to?
A. Yes sir.
Q. 34. If you are keeping dates in July, why didn't you keep them for June?

347 A. I have got the 3rd and 4th; that's when it done the devilment.

Q. 35. It did some devilment in June, didn't it?

A. It never hurt as bad in June as it did in July.

Q. 36. It did do devilment to you?

A. Yes sir.

Q. 37. St-ll you didn't keep any of those dates?

A. No sir, not in June.

Q. 38. But it has been hammered into you, the 3rd and 4th of July?

A. I hammered it into myself.

Q. 39. Mr. Vestal talked to you?

A. Yes sir, he has talked to me; I called Mr. Vestal one day when he was passing my place.

Q. 40. When?

A. 3rd of July, I think.

Q. 41. How close do you live to Mr. Vestal?

A. Mile and a half this side.

Q. 42. You now work for Mr. Vestal?

A. No sir, I ain't worked for him lately.

Q. 43. When did you work for him?

A. It was a year or two ago.

Q. 44. Did you ever sell him any timber?

A. No sir.

Q. 45. Don't you own your farm?

A. No sir.

Q. 46. Whose farm do you live on?

A. H. N. Cochran's farm.

Q. 47. Did you get any damages for last year?

A. I reckon I got as much as $5.00.

Q. 48. How much did you claim for last year?

A. It was put in with Mr. Cochran's and I got $5.00 out of the bunch.

Q. 49. That the claim which you put in in May?

A. No sir, that was for last year.

Q. 50. I believe that you have put in a claim for May?

A. Yes sir, I think so; May or June one.

Q. 51. How much damages are you claiming for this year?

A. Ten dollars is what I put in for.

Q. 52. You haven't put in any for July of this year?

A. No sir.

Q. 53. You have just got that ready to put in?

A. I reckon I have.

348 Q. 54. You are claiming that your potatoes and beans and your corn and various things have been killed by this smoke three times this year; claiming damages for three crops?

A. No sir, I have just put in for May.

Q. 55. You are claiming a crop for every month; that it was killed every month during the summer, aren't you?

Mr. DRAKE: We except to that question because the witness has stated that he is not claiming for three crops, but is only claiming

damage to his crops prior to June, when he filed his claim. Exception overruled. Appeal prayed and granted.

Q. 56. You are going to claim for June damage, aren't you?
A. Third and fourth of June damage.
Q. 57. Also for July?
A. I can't tell you.
Q. 58. It didn't damage you in August of this year?
A. I haven't seen much smoke in August of this year.
Q. 59. How often have you been in that Ducktown basin?
A. I can't tell you.
Q. 60. You have been there many and many times?
A. Yes sir.
Q. 61. Aren't there about ten or fifteen stacks that continually emit smoke in that basin?
A. I don't know.
Q. 62. The furnace stacks, the power plant stacks and about eight or ten stacks from the mines?
A. I suppose so, I don't know.
Q. 63. There are ten or a dozen stacks from which the smoke pours all the time, is that true?
A. Some is always coming from there.
Q. 64. You have seen at least ten or fifteen stacks haven't you?
A. I never have counted them.
Q. 65. There is quite a lots of stacks there?
A. There is a lot of smoke comes from there; I never paid any attention to the stacks.
Q. 66. How many stacks have you ever noticed?
A. None but that old big stack.
Q. 67. That's the fellow that pours smoke all the time?
A. I reckon it is.
Q. 68. He is the fellow that poured that smoke out in
349 May, and in June and in July, wasn't it?
A. Yes sir, I reckon so. When that was shut down it didn't.
Q. 69. He is the fellow that poured that smoke in there on the 26th and the 29th of June, wasn't it?
A. Yes sir, before they shut down. But on the 3rd and 4th of July that wasn't running at all.
Q. 70. But he is the fellow that was pouring out smoke on the 29th of June?
A. It always pours out smoke when they are running it. I didn't pay no*t* attention to it.
Q. 71. Except on the 3rd and 4th of July, you did pay attention to it on the 3rd and 4th of July, but not the other days?
A. Yes I do pay attention to it every time it comes in there and bites my stuff.
Q. 72. Who got you to come here as a witness, Mr. Vestal?
A. No sir.
Q. 73. Were you a witness for Mr. Vestal in his law suit?
A. No sir, not that I know of.
Q. 74. You didn't go to Chattanooga to testify?

A. No sir. I have never been to Chattanooga.

It is agreed between counsel for the State and the defendant that witness lives four miles from Copperhill and six and a half miles from Isabella, air line.

Redirect examination by Mr. DRAKE:

Q. 1. I believe you stated that the reason you can state positively about the 3rd and 4th of July, was that the smoke come in there and killed some of your stuff?

A. Yes sir.

Q. 2. Can you see the stack of the Tennessee Copper Co. from your place?

A. Yes sir, right above my place there you can see it any time.

Q. 3. Did you see it on the 3rd and 4th of July?

A. I wasn't up where I could see it. Whenever I am at work up there I can see it.

Q. 4. Do you know the rules of the board of arbitration committee, how soon you have to file your claim?

350 A. They said it would have to be filed fifteen days after the smoke; I don't know.

Q. 5. From the time the damage is done?

A. Yes sir, from the time it is done, fifteen days is what they tell me, I don't know.

Q. 6. You have put in a claim for damages?

A. Yes sir.

Mileage of witness: 16 Miles.

A. J. BELL, sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. HILL:

Q. 1. How old are you Mr. Bell?

A. Sixty Five.

Q. 2. Where do you live?

A. I live out here at Mineral Bluff.

Q. 3. How long have you lived there?

A. I moved there last November.

Q. 4. Where did you live prior to that time?

A. Right down about four miles this side of Isabella on the edge of Cherokee County, in North Carolina.

Q. 5. How long did you live there?

A. I lived there about twenty-four years.

Q. 6. Did you ever hold any public office?

A. Yes sir, I served as Justice of the Peace.

Q. 7. How long?

A. Twenty-one years.

Q. 8. Have you ever noticed any smoke in the region you live or in the region where you lived previously?

A. Yes sir.

Q. 9. When and how often?

A. I have noticed it ever since the plant went to work.
Q. 10. What plants?
A. The D. S. C. & I. and the Tennessee Copper Co.
Q. 11. You ever been to these plants?
A. Yes sir.
Q. 12. Ever see the smoke there and smell it?
A. Yes sir.
Q. 13. Do you know the condition of the forests in that section of the country?
A. Yes sir, I think I do.
Q. 14. Have you been through the forests?
A. Yes sir.
Q. 15. What is their condition?
A. Its bad.
351 Q. 16. What is the condition this year?
A. In places it's bad.
Q. 17. You ever see smoke in there?
A. Yes, sir.
Q. 18. What was the condition in there last year?
A. It was bad last year but not so bad as this year.
Q. 19. Did you notice any particular evidences of smoke?
A. Yes, sir.
Q. 20. Describe them?
A. Well, sir, there is a streak there something like a mile or a mile and a quarter just beyond me where I live; I am on the South edge of it, it lies North of where I live, that the timber is the worst tinged I think I have seen it there for the last ten years.
Q. 21. What do you mean by tinged?
A. I mean the leaves was bit by the smoke.
Q. 22. What appearance would they have?
A. They would first crimp up, and then they would turn a reddish cast, and fall to the ground.
Q. 23. Many of the leaves on the ground?
A. A good many, yes, sir.
Q. 24. How long is that strip through there?
A. I don't know, sir, I haven't been to the other end.
Q. 25. Don't you know how long it is?
A. No, sir.
Q. 26. Could you say what proportion of that timber is damaged there badly,—the damage on that strip?
A. 20% anyway.
Q. 27. About the crops and garden truck in there, do you know anything about the condition of that?
A. I know about the condition of some of the crops.
Q. 28. Ones that you have noticed?
A. Yes, sir.
Q. 29. Have you ever seen the smoke come in on them?
A. Yes, sir.
Q. 30. What is their condition?
A. The fodder would turn white on the corn, and on the garden

truck, the leaves will crimp up, the tater tops and so on, and then it will turn a kind of reddish color and then brown.

Q. 31. Last year, do you remember any particular dates that you saw that smoke in there?

A. Yes, sir.

Q. 32. How do you remember them?

352 A. I remember one time in particular. I had been down to Chattanooga to attend a trial, and I went home on the 7th of May, and the smoke was in there then very bad for four or five days or maybe a week off and on; in pretty bad.

Q. 33. When did you get home?

A. On the 7th day of May, 1913.

Q. 34. When did the smoke come in there?

A. The 7th and 8th and off and on for a week or more it was in there.

Q. 35. Did you notice the timber and crops during that time, or not?

A. Yes, sir, I noticed my crop and several others.

Q. 36. What was their condition?

A. The corn was bit down just like a killing frost.

Q. 37. What about the potatoes?

A. They was bit.

Q. 38. Were they damaged or not?

A. Yes, sir, they was.

Q. 39. What were you doing in Chattanooga?

A. I had been down there to court.

Q. 40. In whose case?

A. Mr. Vestal's.

Q. 41. Do you know anything about that board of arbitration—how they require you to put in a claim?

A. Yes, sir.

Q. 42. State whether or not they require you to give the dates that the smoke comes in there——

A. Yes, sir.

Q. 43. Is that one of your reasons for remembering dates?

A. Yes, sir.

Q. 44. You put them down so as to put them in the records?

A. Yes, sir; that is the ruling they made; every fifteen days, and give the dates.

Q. 45. You have to give the date on which it happened?

A. Yes, sir.

Q. 47. How close to the Georgia line were you when you were living in North Carolina?

A. Not over 300 yards.

Q. 48. About how far from these plants?

A. Four miles from the D. S. C. & I. Co. and four and a half miles from the Tennessee Copper Company.

Q. 49. While living up there, did you ever come down into Georgia?

A. Yes, sir, every week or so.

Q. 50. That damage that you saw; that entirely in Georgia?
353 A. It was in both places.
Q. 51. Did you really live in both places?
A. My land bordered on the Georgia line for a mile or more and my stock would come across the line and did a number of times.
Q. 52. And you were after them?
A. Yes, sir, I knocked about there.
Q. 52. That damage you spoke of in North Carolina and in Georgia, was that about the time you described as coming back from the federal court?
A. Yes, sir.

Cross-examination by General FOWLER:

Q. 1. You sold your land in North Carolina and moved over here?
A. No, sir, a portion of it.
Q. 2. Your land ever damaged over there?
A. There is but little timber on it now, sir.
Q. 3. You ever sell any timber?
A. Yes, sir, I have sold it for wood.
Q. 4. Who did you sell it to?
A. I sold some of it to the citizens over there, and when they roasted ore in the heaps, I sold a lot of it there.
Q. 5. When was that?
A. 1896 and 1897.
Q. 6. Was your timber killed way back there many years ago when they were roasting ore?
A. Yes, sir, a portion of it was.
Q. 7. Did you get any damages for it?
A. No, sir.
Q. 8. Never did sue them?
A. Yes, sir, I sued them.
Q. 9. The case ever been decided?
A. No, sir; I drawed the suit when they let me off; when they let me off and wouldn't take any more timber, I sued them, and then when I sued them they proposed to treat me right; they proposed to take my timber and my quartz and let me work, and so on, and I withdrawed the suit.
Q. 10. Where was your suit, where was your case begun?
A. The suit was in Polk County, Tennessee.
Q. 11. How long did you work for them after that?
A. I worked for them after I withdrawed that suit for two years.
354 Q. 12. Then what happened?
A. Not anything.
Q. 13. You quit working for them?
A. Yes, sir.
Q. 14. You sue them again?
A. No, sir.
Q. 15. Then you went around trying to get other fellows to sue them?

A. No, sir; I am not fighting that company.

Q. 16. You have been a kind of case settler, you have settled a number of cases, haven't you?

A. No, sir, I haven't settled a number of case; I have tried to settle several.

Q. 17. You have been employed by different parties to settle with the company?

A. No, sir.

Q. 18. You ever been paid anything for trying to settle cases?

A. No, sir.

Q. 19. When you did settle a case, did you get anything?

A. I *gone* Ten Dollars on one case I settled there at Benton.

Q. 20. Whose case was that?

A. J. J. Brown.

Q. 21. Case against the company?

A. Against the D. S. C. & I. Co.

Q. 22. How many times have you been a witness against this company?

A. I can't tell you.

Q. 23. How many times have you been a witness for Mr. Vestal here?

A. Twice.

Q. 24. Every time he had a trial you testified for him?

A. Yes, sir.

Q. 25. You have been a witness in practically all cases of this kind in this country haven't you?

A. No, sir, not in all cases. I ain't been a witness in all cases. I have been a witness a good many times; I have been a witness in several cases.

Q. 26. You have testified at least a dozen times in these cases?

A. Yes, sir, I guess I have, and more too.

Q. 27. You know it pretty well by this time?

A. Yes, sir.

Q. 28. How was it that Mr. Vestal had you out talking to you about it, if you know so well?

A. Mr. Vestal hasn't talked to me. He claims that I know about it, and I think I do.

Q. 29. You and Mr. Vestal came in together when you
355 came in the court room?

A. Yes, sir.

Q. 30. Did he go out for you?

A. No, sir.

Q. 31. He is right there now sitting by the attorney for the State of Georgia?

A. Yes, sir.

Q. 32. Prompting him what to ask you?

A. I don't know.

Q. 33. And Mr. Shippen is sitting right there on the other side of Mr. Vestal?

A. Yes, sir; Mr. Shippen is a man I am not acquainted with.

Q. 34. Did you work for the Ducktown Company in 1902?

A. No, sir.

Q. 35. Didn't you in 1902 say that the Ducktown Company wasn't making enough smoke to smoke a rabbit out of his hole?

A. Yes, sir.

Q. 36. Who did you tell that to?

A. Mr. Reese, and maybe some others. That was when they cut off their roast heaps and they was running roasted ore through the plant there. The people was all hostile then and was suing, and I said I didn't see what the people was so hostile against the D. S. C. & I. Company for; that they wasn't making more than enough smoke to run a rabbit out of its hole; that's what it was.

Q. 37. You now say that they were making smoke?

A. No, sir, not at that time. You see at that time they was running roasted ore through and they had burned all the sulphur out in these piles, and there wasn't but very little sulphur smoke in it.

Q. 38. Wasn't doing any damage at all?

A. No, sir, not at that time they wasn't.

Q. 39. Yet the people were hostile?

A. Yes, sir; there was a heap of talk of suing.

Q. 40. The people are hostile regardless of the amount of smoke that comes out there anyway?

A. No, sir.

Q. 41. If there wasn't any smoke coming out at Ducktown at all, the people would be hostile, wouldn't they?

A. I can't tell what the people thinks about it.

Mr. DRAKE: We except to the question and answer as irrelevant. Exception ovtrruled. Appeal prayed and granted.

356 Q. 42. You had to be kinder hostile to the company, to be elected Justice of the Peace, didn't you?

A. No, sir. That's a place I never wanted in my life.

Q. 43. But you had to be hostile, or you couldn't have been elected.

A. No, sir, I wasn't hostile at all. I ain't fighting the D. S. C. & I. Co. I haven't never done it. While I did sue them, as soon as we compromised I withdrawed that suit.

Q. 44. Squire, do you remember when that high stack went up on the Tennessee Copper Company?

A. Yes, sir.

Q. 45. Wasn't the conditions over in North Georgia very much worse right after that?

A. I don't know; I wasn't around in this country a great deal.

Q. 46. Didn't it carry the smoke off further?

A. Of course it carried further.

Q. 47. In your own country, after that stack went up, wasn't it very much worse?

A. Not right in there; I can't say that it was a bit worse; I am living within four miles.

Q. 48. It reached you anyway?

A. Yes, sir.

Q. 49. I am speaking of down in here six, eight and ten miles away, wasn't it very much worse after that high stack went up?

A. Of course, the higher in the air it would go, the further away it would carry.

Q. 50. When you saw the effects, after that high stack went up in 1906, don't you know that it scorched the forests very much worse than before?

A. Yes, sir, it's obliged to hurt it?

Q. 51. As a matter of fact, it did scorch them very much worse?

A. No, as I said a while ago, I didn't travel through this section of the country back out in here a great deal; I hardly ever went in there.

Q. 52. And don't you know, furthermore, that when these acid plants were installed, the condition of the timber was very much better?

A. Yes, sir, it was a great deal better than it was before they was put in.

357 Q. 53. Whereas stretches of the forest were before burned badly, and since that time, you only notice patches here and there?

A. Yes, sir.

Q. 54. Isn't it 20% better?

A. Yes, sir.

Q. *53.* Isn't it a great deal more than that?

A. I expect it is.

Q. 56. Now, when you travel through the forests, now and then you will notice a patch effected by it?

A. Yes, sir, you will see it in streaks.

Q. 57. You think that it is worse this year than it was last year?

A. I say that it is back there.

Q. 58. In that section you have been talking about?

A. Yes, sir.

Q. 59. What do you mean by back there?

A. I mean beyond my place about five miles from here, to the edge of that back of my place.

Q. 60. This distance of five miles from Blue Ridge, you don't notice it at all?

A. Yes, sir, you can see signs of it all about; then there is streaks that seem to be a great deal worse than the other.

Q. 61. You have noticed the crops generally?

A. Yes, sir.

Q. 62. Aren't they good?

A. Yes, sir, crops are pretty forward.

Q. 63. As a matter of fact aren't the crops this year better than usual?

A. Yes, sir, I think so.

Q. 64. Isn't it a fact that so far as you have noticed the crops are in good condition?

A. Yes, sir, they are, with the exceptions of some places where I have noticed that they have been bit by the smoke?

Q. 65. Where was that?

A. In that streak we have been talking about and if you will come to my house, I could show you a streak in there.

Q. 65. In what?
A. Corn.
Q. 66. You think your corn is effected?
A. I don't think it; I know it.
Q. 67. That was scorched early in the season?
A. It was scorched on the 10th of July. I had beans and stuff bit back in June before this heavy scorch on my corn; that was on the 10th of July.
Q. 68. It was then in silk?
A. No, sir, it was coming up. There is a streak in there
358 where the blades had come out, four and five to the stalk, and that fodder was badly effected. Now there ain't two blades to the stalk in some places.
Q. 69. Leaving out this crop that you noticed there, in June the crops that you noticed in North Georgia were in good condition?
A. Yes, sir.
Q. 70. Have you put in any claim before this arbitration commission?
A. Yes, sir; one.
Q. 71. When was that, last year?
A. No, sir, this year; it is for that smoke.
Q. 72. For damage to that corn?
A. Yes, sir.
Q. 73. How much damage do you claim?
A. I disremember now; some eight or ten dollars.
Q. 74. How much of a patch did you have?
A. Two acres.

Redirect examination by Mr. DRAKE:

Q. 1. In speaking about the condition of timber, lands, etc., you were speaking locally, of the locality in which you live around Mineral Bluff?
A. Which,—about the browning?
Q. 2. Yes?
A. Yes, sir.
Q. 3. The bad condition of the forest, etc.?
A. Yes, sir.
Q. 4. You were asked about testifying in Mr. Vestal's case, did you state that you testified in two cases?
A. No, sir, I testified twice in the same case.
Q. 5. You were a witness in several cases?
A. Yes, sir.
Q. 6. How long have you known the plants up there, and with their history and their work?
A. I can't give the dates they started. I was away from there about one year after the D. S. C. & I. started operating, but since then I have been acquainted all the time.
Q. 7. Pretty familiar with it?
A. Yes, sir.
Q. 8. The people want you because you are a good witness?
A. I don't know whether they do or not.

Q. 9. In 1902, they was mostly roasting; or running ore already roasted?

359 A. Yes, sir.

Q. 10. Have they roasted any since then?

A. No, sir.

Q. 11. They have been smelting green ore?

A. Yes, sir.

Q. 12. Are they making any more smoke than they were in 1902?

A. Not so much more, but it is a good deal stronger of that sulphur.

It is agreed by and between counsel for the State and the defendant that the witness lives seven and three-quarter- miles from Copperhill and Eight and three quarter- miles from Isabella.

Mileage of witness: Nine miles.

Recross-examination by General FOWLER:

Q. 1. Of course you are much nearer to Copperhill than to Isabella?

A. Not much; about a mile.

Q. 2. The Copperhill Furnaces are a great deal larger than those at Isabella?

A. Yes, sir, they smelt a good deal more ore than they do at Isabella.

Q. 3. And they make a great deal more of the poisonous fumes too, don't they?

A. They are obliged to, because they handle more ore.

Q 4. The Isabella Company is situated North of a range of Hills too, aren't they?

A. They are from the Tennessee Copper Company; hills and ridges between them.

Q. 5. You say that you have put in a claim for damages the present year, you understand, of course, that these damages are to be paid out of the fund paid for damages done by the Tennessee Copper Company, and not by the Isabella Company?

A. I suppose so.

Q. 6. That is your understanding, isn't it?

A. Yes, sir.

W. H. MARTIN, sworn for the State of Georgia, to speak the truth, the whole true and nothing but the truth, testified as follows:

360 Direct examination by Mr. DRAKE:

Q. 1. Do you know Mr. C. G. Baugh, sitting right behind you there?

A. Yes sir.

Q. 2. Was he down at your place any time this year, and if so when?

A. He was down at my place some time in June; I don't remember the dates.

Q. 3. What did he claim to be doing there?

A. I met him out in the road there, and he said that he was looking around about this smoke business, to see whether it was doing any damage.

Q. 4. What did you do then, and say to him?

A. Mr. Baugh made some remarks that he didn't see any damage to amount to anything on the timber; and I says "Mr. Baugh come with me and look at my bean patch and potato patch" and he went with me and looked at the beans and potatoes that had all been burned.

Q. 5. What did he say to you?

A. He said that they were damaged, and that I ought to have pay for it.

Q. 6. Who was with you?

A. Mr. George Holloway and Mr. Haskin Holloway.

Q. 7. In whose employment was Mr. Baugh at that time?

A. He said that he was employed by the D. S. C. & I. Co.

Q. 8. Whereabouts do you live?

A. About six miles Southwest of here.

Q. 9. Near what point?

A. Near Burnett in the edge of Gilmer County; about a mile over in Fannin.

Q. 10. Has there been any damage done to the timber over there?

A. Yes sir.

Q. 11. When, this year?

A. Yes sir.

Q. 12. To what extent?

A. Pretty bad.

Q. 13. Have you noticed any dates that the smoke come in there?

A. I noticed it on the 3rd day of June.

Q. 14. Was that the damage you were showing Mr. Baugh?

A. That was the damage when he come in there; then there was some very shortly after he was there.

Q. 15. That was some time the early part of June?

A. Yes sir.

Q. 16. What other date have you seen it since the 3rd of June?

A. July 3rd and 4th, the smoke was in that section.

361 Q. 17. Of this year?

A. Yes sir.

Q. 18. Did you see the effects of it on the stuff after then?

A. Yes sir.

Q. 19. What did it effect down there?

A. You could see the effect on the timber and on the growing crops some.

Q. 20. The potatoes and stuff that you showed Mr. Baugh, what was their condition?

A. It had killed the leaves pretty bad. We will have some potatoes, of course, but the leaves are pretty well all dead and rotting off.

Cross-examination by General FOWLER:

Q. 1. If your potatoes and everything of the kind was killed before Mr. Baugh was in there, they couldn't get killed any more, could they?

A. They got scorched again; at the start they wasn't so much damaged.

Q. 2. They couldn't be killed but once could they?

A. One time it would kill maybe half of them, and maybe the smoke would come in again the next week and kill the balance.

Q. 3. What day was it that smoke come in there before Mr. Baugh come there?

A. June 3rd.

Q. —. Did you put that down?

A. No sir, I just remembered it.

Q. 5. You going to put in a claim for damages?

A. I put in a claim for damages before Mr. Baugh come there.

Q. 6. For this year?

A. Yes sir, with the Farmers' Union people.

Q. 7. You mean you are preparing to bring suit?

A. Yes sir.

Q. 8. How much?

A. Eight Hundred Dollars.

Q. 9. What people you put it in against?

A. The Ducktown Sulphur Company.

Q. 10. You put that in with somebody?

A. Yes sir, with the Farmers' Union people; with the Farmers Union Lawyers.

Q. 11. You have a Union, an organization of the farmers?

A. Yes sir.

Q. 12. And you have lawyers employed?

A. Yes sir.

Q. 13. Who are they?

362 A. Mr. Duckworth is one of them, and Mr. Drake; I don't know the others.

Q. 14. Mr. Drake one of the lawyers for that Farmers' Union?

A. I can't say whether he is or not.

Q. 15. So you have got a Farmers' Union here?

A. Yes sir.

Q. 16. What is that Farmers Union for?

A. It is the farmers' educational union.

Q. 17. And the farmers have taken up this smoke question?

A. Yes sir; we are suing for damages.

Q. 18. They have gone in together and have employed counsel?

A. Yes sir, I suppose so.

Q. 19. That farmers' union exists in Gilmer and Fannin County?

A. There is some in Gilmer; I don't know about Fannin.

Q. 20. You belong in Gilmer?

A. Yes sir.

Q. 21. And you are watching mighty particular to see every little bit of damage to make proof?

A. I have watched it pretty close this year.
Q. 22. Did you watch last year?
A. I have watched every year, but I haven't made any point to watch for any particular dates.
Q. 23. Have you been watching that for six or seven years?
A. No sir, I was in North Carolina.
Q. 24. It didn't scorch you any over there?
A. Yes sir.
Q. 25. How far away were you?
A. Eighteen or twenty miles.
Q. 26. From Ducktown?
A. Yes sir.
Q. 27. You have been here how many years?
A. Eight years last March; I left here before that and went to North Carolina.
Q. 28. How much land do you own?
A. Two hundred and seventy acres.
Q. 29. You bought that eight years ago?
A. No sir.
Q. 30. When did you buy it?
A. Part of it eight years ago, and part of it since that.
Q. 31. You put in for damage to timber and everything else?
A. Yes sir.
Q. 32. You are going to sue for that?
A. Yes sir.
Q. 33. Have you filed any claim with this arbitration board?
A. Not that I know of.
363 Q. 34. You know that they have in hand fund for distribution among the people for damages?
A. I suppose so, I have heard it.
Q. 35. Haven't you prepared any claim to present to them?
A. No sir.
Q. 36. You are going to fight it out in law?
A. I think that's as good a way as any; I don't think they will do anything unless they are made to do it any how.

It is agreed by and between counsel for the State and the defendant that the witness lives twelve and a half miles from Copperhill and fourteen and a half miles from Isabella.

Mileage of witness: 12 miles.

Redirect examination by Mr. DRAKE:

Q. 1. You were asked about the Farmers' Union, I will ask you if that is not a National Organization?
A. Yes sir.
Q. 2. And has been for several years?
A. Yes sir.
Q. 3. And the Mr. Duckworth you speak of he is an officer, a State or a National Officer in the Union?
A. Yes sir.

H. H. HOLLOWAY, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. How old are you Mr. Holloway?
A. Forty-three, I guess.
Q. 2. Where do you live?
A. In Gilmer County.
Q. 3. Near what point?
A. Near Burnett?
Q. 4. Which way, and how far from that point?
A. About a mile I guess Southwest from there.
Q. 5. Do you know Mr. C. G. Baugh?
A. Yes sir.
Q. 6. Is that him sitting there (Indicating)?
A. Yes sir.
Q. 7. Did you see him at any time in Gilmer County, and if so when?
A. I see'd him down there; I don't know exactly the date.
Q. 8. Who was with you?
A. Bill Martin and George Holloway.
364 Q. 9. If there was anything said about smoke damage on that occasion, tell what was said; what Mr. Baugh said?
A. Bill Martin got Mr. Baugh to come and look at some of his stuff that was damaged, and Mr. Baugh told him that he thought that he ought to have pay for the damage; he said that he was looking out for timber and didn't have anything to do with that or something of the kind.
Q 4. That garden truck, he said he had nothing to do with?
A. Yes sir.
Q. 5. Do you remember what month that was in?
A. No sir, I don't; It must have been the last of June or the first of July.

Mileage of witness; 12 miles.

G. W. HOLLOWAY, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. How old are you Mr. Holloway?
A. I will be forty-six if I live to see the 4th of October.
Q. 2. Near what point do you live in Georgia?
A. I live in the North part of Gilmer County, on the Ellijay and Ducktown road, about a mile from the Fannin line.
Q. 3. Near what post office or station on that road?
A. My post office is Burnett, Georgia.
Q. —. Do you live East of Burnett?
A. I live due South of Burnett about a mile.

It is agreed by and between counsel for the State and the de-

fendant, that the witness lives thirteen and a quarter miles from Copperhill and fifteen and a quarter miles from Isabella.

Q. 5. Do you know Mr. C. G. Baugh?

A. Yes sir.

Q. 6. That the gentleman sitting right behind you (indicating)?

A. Yes sir, that's him.

Q. 7. Has he been down in your neighborhood this year? If so, when?

A. He was down there, but I can't give the date he was there.

Q. 8. What was he doing down there?

365 A. He said that he was looking for damages for the D. S. C. & I. Company.

Q. 9. Did he say that he was working for them?

A. Yes sir.

Q. 10. What did he have to say about them?

A. He said that the D. S. C. & I. Company was paying him Five Dollars a day and expenses, and he said that the T. C. Company offered him Six; but that he wouldn't work for the T. C. Company.

Q. 11. Did you see him shown any damage and hear what he said?

A. Yes sir, I was there, and Mr. Martin took Mr. Baugh to his garden and showed him some irish potatoes and some beans and Mr. Baugh said "Your garden is damaged, and you ought to have some pay for it; you ought to have damages."

Q. 12. Do you know when that was?

A. It was some time in June, is the best of my recollection; I can't tell you when.

Q. 13. You don't remember the date?

A. No sir.

Q. 14. Did you see that damage you are telling about?

A. Yes sir.

Q. 15. What kind of damage was it?

A. The irish potato tops was crisped and scorched, and so was the beans.

Q. 16. Had you seen any smoke in there before that?

A. It was there on the second and third of June, to the best of my recollection. Heavy smoke in there.

Q. 17. That this year?

A. Yes sir.

Q. 18. Could you see it?

A. Yes sir.

Q. 19. Could you smell it?

A. Yes sir.

Q. 20. Have you seen it in there any more this year?

A. I don't remember whether I have saw it any more than that time.

Q. 21. Have you observed any damage to the forests this year, or last year?

A. Last year, you say?

Q. 22. Any damage this year or last year?

A. I haven't been in the mountains; I haven't been off of my place this year; my forest is not as bad this year as common.

Q. 23. Was it burned any last year?

A. Yes sir, it was burned; the leaves turned yellow, and fell of-.

366 Q. 24. Did they turn yellow and fall off before the right time?

A. Yes sir.

Cross-examination by General FOWLER:

Q. 1. Last year you had a drouth in August and September that killed the trees in the forests, or was that year before last?

A. I don't remember that.

Q. 2. Didn't you have a heavy drouth down through here?

A. It seems that last year was very dry in the fall season; but I don't remember how that is.

Q. 3. Wasn't that in August last year?

A. I wouldn't swear that it was in August, because I can't tell about that at all.

Q. 4. Do you remember how it was year before last?

A. I don't.

Q. 5. You don't remember how it was any time before last year?

A. Yes sir.

Q. 6. Do you remember how it was six or eight years ago?

A. Yes sir.

Q. —. How was it, bad?

A. Yes sir.

Q. 8. It is very much better now than then?

A. My forest is better than it was then; I can't say about the others, I haven't been out.

Q. 9. You give attention to your own property?

A. I have been at home; I don't know how it is on the mountains.

Q. 10. Have you ever been in Ducktown?

A. Yes sir, I worked in Ducktown about five years. I quit the first of last June. I think I worked there fourteen months; I commenced in March 1912, the last day of March, and I quit*e* there, I believe, June of last year, 1913.

Q. 11. Who did you work for?

A. The D. S. C. & I. Company.

Q. 12. Did you ever work for them before that?

A. Yes sir.

Q. 13. When was that?

A. I can't tell you how long; that has been a long time ago and I would have to guess at the time; I haven't got the dates and I don't know, but it has been something like fifteen years ago; just guessing at it.

Q. 14. At that time the Tennessee Copper Company wasn't operating was it?

A. When I was working there then the Tennessee Copper Co. was building its plant.

367 Q. 15. Did you stay there until after the Tennessee Copper Company begun operating its plant?

A. It seems that I was there.

Q. 16. That is a very much larger concern than the Ducktown plant, isn't it?

A. Yes sir, I think so.

Q. 17. Do you remember when they erected that high stack?

A. I wasn't there.

Q. 18. Living down where you are now?

A. Yes sir.

Q. 19. Don't you know when it was erected?

A. Yes sir.

Q. 20. What is it that is scorching your timber?

A. I can't swear about that; I would like to be able to tell about that drought, but that is something I can't swear about point blank.

Q. 21. Don't you know that it was after the erection of that high stack that your timber began to be scorched?

A. I don't remember about our timber being scorched until they cut out roasting that ore; when they begun to run it through the furnaces green is the first I noticed; it hurt from that time.

Q. 22. It was six or seven years ago before your timber began to scorch badly?

A. I can't tell you exactly.

Q. 23. Isn't that your best judgment, that six, seven and eight years ago, it began to scorch badly?

A. I can't say about that; it would be guess work; I want to give you the exact truth about it, and I can't guess it; I don't remember how many years it has been.

Q. 24. It hasn't been over eight years has it?

A. I think something like that, just guessing at it, if you count that as evidence; I guess it would be something like seven or eight years ago. I never noticed the timber dying until they stopped roasting the ore and commenced to run the green ore through the furnaces.

Q. 25. Your best judgment is that you first noticed it seven or eight years ago?

A. It was when the- commenced running the green ore through the furnaces; if you know how long that has been you can get the time.

Q. 26. Do you know when they put in those acid plants?

368 A. I have an idea when the- put them in.

Q. 27. Have you worked there since that time?

A. Yes sir. I worked there, I told you, in 1912 and 1913.

Q. 28. You know that since these acid plants have been put in, it has been very much better on your place?

A. It has been better there on my place this year than it has been, but ever since they put up the stacks there the timber has been scorched bad.

Q. 29. What year was that?

A. Up until a couple of years ago.

Q. 30. For the last two years it has been very much better than it has been since the time you mention?

A. Yes sir, there on my place it is better than it has been. My place, so far as I have noticed it shows the least at this time. I don't know though, it's pretty early for it to begin to show up on us down here; I don't know what it might do later on. My timber is better right now than it was last year.

Q. 31. Did you file any claim for damages?

A. Yes sir.

Q. 32. Who with?

A. I filed a claim with—I can't tell you the names of the lawyers.

Q. 33. Lawyers in Atlanta?

A. Yes sir.

Q. 34. That is, you contemplate bringing a suit?

A. Yes.

Q. 35. Which companies are you going to sue?

A. I can't say; I just put in my claim with them.

Q. 36. They are to sue whichever company they see fit, or both of the companies?

A. Yes sir, both companies, if they see fit.

Q. 37. How much do you claim that you are damaged?

A. I don't know; I haven't swore to no damage at all.

Q. 38. How much do you think that you are damaged?

A. Its hard for me to tell. I can't swear at all; if I wasn't on oath, I could make a guess with you as to the damages.

Q. 39. Don't you know that if you ever get any damages you will have to swear to it on oath?

A. If I have to swear just what it is, I won't get no dam-
369 ages, because I can't swear how much I am damaged; I wouldn't swear a lie if I never got a copper.

Mileage of witness: 13 miles.

C. J. TRAMMEL, being sworn to speak the truth, the whole truth and nothing but the truth, testified:

Direct examination by Mr. DRAKE:

Q. 1. Where do you live?

A. In Georgia, Fannin County, two miles South of here.

Q. 2. How old are you?

A. I am going on sixty-two; I will be on the 22nd of this month.

Q. 3. How long have you lived in the neighborhood in which you now live?

A. I have lived there all my life, except fourteen years in the West.

Q. 4. How long have you been there the last time?

A. Twenty-three or four years.

Q. 5. How much land do you own in that neighborhood?

A. Eight hundred and forty-two acres.

Q. 6. Have you, in the last few years, seen any sulphur smoke in your neoghborhood?

A. Yes sir.

Q. 7. How much and how often?

A. Very frequently; it's in there every time the wind sets from the North and the Northwest.

Q. 8. Have you observed any smoke damage in your neighborhood in the last few years?

A. Yes sir.

Q. 9. Beginning last year, did you observe any smoke in there last year?

A. Yes sir.

Q. 10. Did you see any damage that it did?

A. Yes sir.

Q. 11. Seen any after you smelled it in there?

A. Yes sir.

Q. 12. How many times?

A. Numbers of times.

Q. 13. How will it effect the forest trees, the leaves on them when it comes in there?

A. Well sir, it will turn them brown and effect them some-
370 thing like they have come in contact with heat; turns them a brown looking color.

Q. 14. When it parches these leaves, do they hang on for the balance of the year, or how do they do?

A. No sir, they drop off; shed off.

Q. 15. When?

A. They will shed at different times; owing to when they are effected; when they are effected, they will drop off.

Q. 16. Have you ever seen them falling off before the right time of the year?

A. Yes sir.

Q. 17. What months?

A. I have seen them falling off through June, July and August.

Q. 18. What years,—last year?

A. Yes sir.

Q. 19. Have you seen any smoke this year?

A. Yes sir.

Q. 20. To what extent have you seen it?

A. I have seen it; more of it this year and more effects this year than for three years past.

Q. 21. What effect did it have on your forest?

A. It scorched the foliage of the trees; it struck the timber and done the most damage when the foliage was tender; it scorched the young twigs and the leaves.

Q. 22. What months you see that in, May?

A. Yes sir.

Q. 23. June?

A. Yes sir.

Q. 24. July?

A. Yes sir.

Q. 25. Have you seen any this month, August?
A. Yes sir.
Q. 26. What varieties of the trees does it injure up there in your forests?
A. Different varieties; Spanish Oak, Black Oak, particularly on that class of timber, and pines.
Q. 27. How much of your lands are in timber, and about how much in cultivation?
A. Seven hundred and fifty acres of timbered lands.
Q. 28. Has it been through that timber for the last few weeks?
A. Yes sir.
Q. 29. Did you observe the condition?
A. Yes sir.
Q. 30. How is it?
A. There is dead timber all over the forests; there is more dead trees that died this season than there has been for several
371 years back.
Q. 31. Coming down to July of this year, did you see any smoke in there in July, if so state what dates?
A. Yes sir, it was in there on the 3rd and 5th of July.
Q. 32. Where was you on the 3rd of July?
A. I was at home.
Q. 33. To what extent did you see it in there on your timber?
A. I seen it in there bad, all over the country there.
Q. 34. Was it much bad?
A. It was in there strong enough to be smelt.
Q. 35. On the 5th of July did you see it, and where was you, and where did you go that day?
A. I went to an orchard I had on the mountain there.
Q. 36. Which way did that mountain face?
A. It faced West from where I live.
Q. 37. How far away?
A. Mile and a quarter, about that.
Q. —. Who was with you on that trip?
A. Mr. Bennett and Mr. Thomas and we met up with Mr. Sebolt coming down on this side of the mountain.
Q. 39. Mr. Sebolt here today as a witness?
A. Yes sir.
Q. 40. On that trip on the 5th of July, were you where you could look across into the Ducktown basin?
A. Yes sir.
Q. 41. Where you could see these copper plants?
A. We could see where they was at.
Q. 42. If you looked over that way, what did you see?
A. We seen the smoke coming out of the basin and drifting out in the direction we was at.
Q. 43. You could see it on the mountains around you and on the hills?
A. Yes sir.
Q. 44. Could you smell it?
A. Yes sir.

Q. 45. Did you observe any damage soon thereafter in the forests or on your garden truck, where you said you saw it on the 3rd?

A. On the 4th there I noticed the foliage on the fruit trees there close to the house; it scorched the young twigs up; the tomato
372 plants and garden beans and vines.

Q. 16. Had these beans and tomatoes and fruit trees been all right before that?

A. Yes sir.

Q. 47. That showed up on the fourth?

A. Yes sir.

Q. 48. And you saw the effects on the 4th?

A. Yes sir.

Q. 49. Do you raise any corn crops or pea crops and things of that kind?

A. My tenants do.

Q. 50. Have you noticed them kind of crops in the last few years?

A. It was on them last year, and this year.

Q. 51. What effects have you seen this year and last year?

A. Last year it effected them worse than it has so far this year.

Q. 52. To what extent was it damaged last year?

A. It was damaged pretty heavy last year.

Q. 53. How much corn did you get off your place last year by your tenants?

A. They made something between three and four hundred bushels.

Q. 54. How many acres?

A. I don't remember how many acres; they generally have twenty to twenty-three acres.

Q. 55. How much of that 20 to 23 acres was bit and burned by this smoke?

A. There was signs all over it.

Q. 56. In what way was the corn effected?

A. In spots; it effects the fodder, the silks and the tassels on the corn.

Q. 57. Did you notice any effects last year on your fodder?

A. Yes sir.

Q. 58. Did you see any of the effects last year on your orchard?

A. Yes sir.

Q. 59. How many acres of orchard have you?

A. Fifteen acres in one orchard; then I planted out seventeen hundred trees in two other places; I don't know how much is in that.

Q. 60. How much of that orchard was bit by the smoke?

A. Principally the whole orchard was effected.

Q. 61. How is it this year?

A. It's the same *was* this year; there is heavier damage this year than last.

373 Q. 62. Which way from where you live, is that orchard?

A. It's west of the lot I am on. I live on lot 29.

Q. 63. That orchard you speak of lies West of you?

A. Yes sir.

Q. 64. How far west from where you live?

A. It's a mile and a quarter.

Q. 65. On that mountain on which you stood and looked over into the Ducktown basin and saw that smoke coming out?
A. Yes sir.

It is agreed by and between counsel for the State and for the Defendant that the witness lives 11½ miles from Copperhill, a little East of South, and 13½ miles from Isabella.

Cross-examination by General FOWLER:

Q. 1. Do you belong to the Farmers' Union?
A. No sir.
Q. 2. Have you put in a claim for damages?
A. No sir, I have got a suit against the copper company.
Q. 3. How long has that suit been pending, a good many years?
A. It is dated March 1906; three years up to 1908.
Q. 4. That suit against the Ducktown Company?
A. Yes sir, the Ducktown Company and the Tennessee Company.
Q. 5. The damages began in 1906, and the suit is for that time up to 1908?
A. Yes sir, my damages begun in 1905 and 1904 to 1908.
Q. 6. You brought the suit in 1906?
A. No sir, I brought it in 1908, March 1908, I think and went back three years; that was as far back as we could go.
Q. 7. You went back then to 1905?
A. Yes sir, three from eight leaves five; it covers the growing season- of 1906, 1907 and 1908.
Q. 8. Then the suit was filed in March, 1909?
A. Yes sir, that's the way the suits is filed.
Q. 9. You have been watching ever since to see if you couldn't sue for more damages?
A. No sir, I went down for the purpose of suing, but I couldn't get into the court; the lawyers didn't want to take any more suit-.
374 Q. 10. When did you go down to sue again?
A. I went down when the time was up and I could sue for three years back.
Q. 11. Who was the lawyer?
A. Mayfield.
Q. 12. Have you gone in with these Georgia men to have their suits brought?
A. No sir.
Q. 13. Have you filed any claim with this commission?
A. No sir, I haven't filed any claim; only that suit.
Q. 14. You know there is a fund out of which you can get damages, don't you?
A. No sir, I don't know anything about it.
Q. 15. In the hands of this board of arbitrators?
A. Yes sir, but I didn't put in no claim.
Q. 16. If you have suffered damage, why didn't you put your claim in?
A. Because, I don't propose to take no such thing as that.

Q. 17. Have you sold any timber off of your land?

A. No sir, I own a saw mill there myself.

Q. 18. How long have you been running a saw-mill?

A. I have been sawing there for about twenty years.

Q. 19. How many years have you been running a saw mill on that seven or eight hundred acres you own?

A. Off and on for twenty years.

Q. 20. How many thousand feet have you taken from it?

A. Six or seven hundred thousand.

Q. 21. How much is standing there yet?

A. I don't know how much is standing there yet; there has been destroyed something over a million feet.

Q. 22. You cut the trees and left the laps in the woods?

A. Yes sir.

Q. 23. Don't you know that cutting the trees destorys a good deal of the timber?

A. No sir, we are always careful about felling timber not to destroy the other timber.

Q. 24. Forest fires been through your tract?

A. No sir, there have been some wood fires through some portions of it.

Q. 25. Don't these fires burn up the laps of the trees and destroy other timber?

375 A. It destroys some of the young timber in places.

Q. 26. Do you know anything about the diseases of timber?

A. I have heard a great deal about the diseases of timber.

Q. 27. Have you ever studied it?

A. Well, I know that whenever you put diseased timber in contact with other timber, it will disease the other timber.

Q. 28. Don't you know that the dead laps lying in the woods will breed diseases to the different kinds of good timber surrounding it, like one man will take a disease from another?

A. No, I don't know that; I have buried up young forest trees with the laps of other trees, and these young trees grow healthy and all right.

Q. 29. You don't mean that you covered them up with the laps?

A. All around the roots of them.

Q. 30. Now, Mr. Trammel, you said that you saw smoke from the Ducktown basin I believe on the 3rd of July?

A. I didn't say that. I said I saw it on the 3rd of July; I don't know where it come from on the 3rd of July. I seen it in the field down there below where I live.

Q. 31. On what day did you see it coming from the Ducktown basin?

A. The fifth of July.

Q. 32. Where were you?

A. On this mountain back here in that orchard.

Q. 33. What was it that you saw?

A. I saw smoke coming out from that basin and drifting in this direction.

Q. 34. Coming from the Ducktown basin?
A. Yes sir.
Q. 35. Didn't you see ten or twelve stacks there from which smoke was coming?
A. I saw several stacks there; stacks to the other plants.
Q. 36. Furnace stack and out of the power plant stacks?
A. Yes sir.
Q. 37. Then there are a number of stacks from the various mines around there; isn't that true?
A. Yes sir, stacks all around there.
Q. 38. So, when the wind is from a certain direction the smoke drifts and is carried from eight or a dozen stacks?
376 A. If they were all in operation it would, yes sir.
Q. 39. All are in operation a good part of the time?
A. I don't know about that; I can see the fumes coming out from the basin.
Q. 40. Anyway, you saw a heavy smoke coming out of the basin on the 5th?
A. Yes sir.
Q. 41. And how many stacks were emitting smoke, you don't know?
A. No sir, I could see the smoke coming from the basin.
Q. 42. From what stacks it was coming from, you don't know?
A. No sir; it was from right where the plant is; right in the location of the acid plant and smelters there; we could see it come out and the volume rise up into the air.
Q. 43. When did the first smoke come in there this year?
A. I don't know.
Q. 44. Was it this Spring after the vegetation came out?
A. It come in there in April.
Q. 45. Did you smell it?
A. Yes sir.
Q. 46. Do you smell it every time it comes in there?
A. No sir, not every time; sometimes it is scattered by the winds and is weakened.
Q. 47. Did it come in there in May?
A. Yes sir.
Q. 48. What time?
A. I don't remember, something along about the first of May it come in there.
Q. 49. Can't you tell any dates in May?
A. No sir, I didn't keep any track of it.
Q. 50. You never did keep any track of it did you?
A. No- until this smoke in July.
Q. 51. How come you to keep track of that?
A. I knowed it was the fourth; I seen this here damage done there by the smoke the day before.
Q. 52. What day was the fourth of July—did you go to the picnic?
A. No sir, I was at home.
Q. 53. You stayed at home on the fourth?

A. Yes sir.

Q. 54. Stayed at home on the 3rd?

A. Yes sir.

377 Q. 55. Stayed at home on the second?

A. I don't know whether I was at home on the second or not.

Q. 56. You just stayed around home, and knowed it was the fourth?

A. Yes sir; don't you suppose a man can keep track of the 4th of July?

Q. 57. What was you doing at home on the 4th, celebrating?

A. I celebrated at home.

Q. 59. You didn't celebrate the fourth looking out for smoke did you?

A. No sir.

Q. 60. Was it in there on the 30th of June?

A. I never noticed.

Q. 61. Was it there on the 29th of June?

A. I didn't notice.

Q. 62. Was it in there on the 28th of June?

A. I didn't notice any then.

Q. 63. You didn't notice any the latter part of June at all, did you?

A. No, I don't remember.

Q. 64. Notice any the middle of June?

A. Yes sir.

Q. 65. Any smoke in there the first of June?

A. Yes sir. The Tennessee people was shut down the latter part of June?

Q. 66. How do you know?

A. I was by there and went to Knoxville, and saw that they were shut down, and after I come back home, I seed smoke in there.

Q. 67. When was that?

A. I don't remember when it was.

Q. 68. You remember the 3rd day of July, and can't remember when you went to Knoxville?

A. No sir.

Q. 69. When had you been to Knoxville before that?

A. Several years; ten years I reckon.

Q. 70. You can't remember when you went to Knoxville, and yet you can remember the 3rd day of July?

A. Yes sir.

Q. 71. Who have you been talking to about this case, and about your testimony, Mr. Vestal?

A. I have spoke to him about it, yes sir.

Q. 72. You and he have gone over this case together, haven't you?

A. No sir, we haven't been talking anything particular
378 about the matter; we have been talking about what we have seen.

Q. 73. When did you tell him that?

A. I don't remember; the other day.

Q. 74. Have you been talking to Mr. Shippen about it?

A. I have been talking to one of them; not this man here.

Q. 75. You lumber fellows are standing in on this thing aren't you?

A. Not that I know of in particular; we are trying to fight for our rights; each one of us.

Q. 76. Any way, your tract has been damaged there in June of this year?

A. Yes sir.

Q. 77. Just burned down before July wasn't it?

A. It was seriously bit some of it; the orchard was damaged seriously in April and in May.

Q. 78. Fire went through your orchard a year or two ago, didn't it?

A. It went through a portion of it; only a little.

Q. 79. It didn't hurt it though, did it?

Mr. DRAKE: We except to the question for the reason that this testimony has already been gone over by General Fowler.

Exception overruled.

Appeal prayed and granted.

Q. 80. It didn't hurt your orchard for the fire to go through?

A. Well sir; some fire got into my orchard; there was six trees, I believe that was destroyed; some parties let fire get into one corner of my orchard.

Q. 81. When was that?

A. Year before last.

Q. 82. Didn't you have a drouth through there last year?

A. Not anything serious.

Q. 83. This year, didn't you have about six weeks of the hottest and dryest weather you ever saw for the season in this country?

A. No, I don't think so. There was six weeks that we didn't have any rain.

Q. 84. You did have a dry spell, a very dry spell?

A. Yes sir, we had a dry spell. We had a spell that just suited our crops during May and June.

Q. 85. During what months does your corn grow down here?

379 A. It grows all through the summer season.

Q. 86. When do you plant it?

A. At different times, whenever you get ready; generally we plant in April.

Q. 87. That comes up about the first of May?

A. Some of it does, yes sir.

Q. 88. Your corn does its principal growing during the months of May and June?

A. Oh no; it just gets started; it takes practically the whole season to make it; it takes until September.

Q. 89. When do you lay your corn by?

A. We lay by at different times.

Q. 90. Don't you lay by the last of June?
A. July and August, sometimes the first of August.
Q. 91. You mean to say that you plant corn in April and don't lay it by until August?
A. Sometimes, yes sir; in July and August.
Q. 92. Isn't that corn well grown by the first of July, up over a horse's back by the first of July?
A. When it is planted in April, it is generally silking and Tasseling by the first of July.
Q. 93. You don't think about plowing corn when it is that high?
A. Yes sir, we plow it when it is higher than that.
Q. 94. You do that after it silks and tassels?
A. If we don't lay by, we work it that late.
Q. 95. How long has your land been cleared?
A. Fifteen or sixteen years, some of it twenty or thirty.
Q. 96. Upland or bottom land?
A. Upland and bottom land too.

Redirect examination by Mr. DRAKE:

Q. 1. You were asked about bringing suits over in Tennessee that hadn't been tried, I will ask you if the reason isn't that the court at Ducktown is so crowded you can't get a trial?
A. Yes sir.
Q. 2. So many cases on the docket?
A. Yes sir; and has been for several years. They just hold the court to try criminal cases, and the civil docket dismissed; they don't try nothing but the criminal business over there.

380 Recross-examination by Mr. FOWLER:

Q. 1. Don't you know it to be a fact that the attorneys for the Ducktown Company was there to try the cases and was clamoring for a trial, and that the attorneys for the plaintiff's wouldn't try them; that they would dismiss them before they would try them at all?
A. No, I don't know that.

Mr. DRAKE: We except to the question, because no facts have been stated on which to base the question.
Exception overruled.
Appeal prayed and granted.

The next witness, E. B. CLARKE, having first been duly sworn, testified as follows:

Direct examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. What is your age?
A. Thirty years.
Q. 2. What is your profession?

A. I am a forester with the United States Government.

Q. 3. You are with the Department of Forestry, Bureau of Forestry?

A. Yes sir.

Q. 4. Department of Agriculture?

A. Yes sir.

Q. 5. How long have you been in that service?

A. A little over five years.

Q. 6. Where are you stationed now?

A. At Blue Ridge, Georgia.

Q. 7. How long have you been stationed here?

A. Been stationed here permanently two years. Off and on over three years.

Q. 8. Do you know Dr. Hedgecock?

A. I do.

Q. 9. State whether or not you accompanied him on a trip of investigation this week and last week?

A. I did.

Q. 10. How many trips did you make?

A. We have made four trips all together, last Friday, Saturday, Monday and made one Thursday, I believe, but it didn't have anything to do with this.

381 Q. 11. Where did you go on your Friday trip?

A. We went this main road between here and Copperhill, to Copperhill and from there to Ducktown and back to Copperhill, and then went to Epworth, Georgia, and then returned to Blue Ridge.

Q. 12. Where did you go on the second trip?

A. We left here and went to Epworth and then to Madola and then to a farm house where a Mr. Barnes lives and then up on Barnes Mountain to the top, then returned by way of Madola and Pierceville. We went to Granny Marr Mountain returning to Pierceville and then to Copperhill and then to Blue Ridge.

Q. 13. Then on the next trip where did you go?

A. Monday we went to Ellijay and west east from Ellijay and returned.

Q. 14. How many miles would you say you have covered on all those trips?

A. The first day we covered about fifty miles, the second day we covered about sixty five, and on Monday we covered about forty five?

Q. 15. Did you notice the conditions of the forests on those trips?

A. I did.

Q. 16. Could you state what that condition was, describing it if you will?

A. In comparison with other lands?

Q. 17. First, just describe it.

A. Well, in around south of Copperhill on the Georgia side, southwest of there, the forests are all of very — nature, and have to a certain extent been killed and damaged.

Q. 18. What is the appearance of the trees and foliage?

A. A great many of them are stained and browned and scorched, and in a dying condition.

Q. 19. What is the appearance of the trees, the leaves of the trees as to what has caused that scorching and searing, if you know?

A. I examined several of the trees,——

Q. 20. You are not an expert botanist? You are a forester?

A. I had Dr. Hedgecock examine them and he claimed they were damaged by——

By COUNSEL FOR DEFENDANT: Don't state anything that Dr. Hedgecock said:

382 Q. 21. Did the trees appear to have been in that condition for a great length of time or for a short period of time, or both?

A. Some of the leaves have been recently killed, probably within the last two months, while others and other parts of the trees have been damaged previously in the past year, and maybe six or eight years.

Q. 22. To what extent—what was the extent of the timber which was damaged, I mean did it or not extend over the territory covered by those various trips?

A. On each of the trips there was a great deal of damaged timber to be seen on all sides.

Q. 23. Now, you started a moment ago to compare that with other forests, you may do that.

A. It is very inferior compared with forests just east of here, which I have been purchasing and examining the past three years.

Q. 24. You were purchasing that for the Government?

A. Yes sir.

Q. 25. Is that in a healthier or more sickly condition than the forests out here?

A. It is far more healthier.

Q. 26. State whether or not that is in the same sort of country as the forests here?

A. Topographically, yes sir, practically the same.

Q. 27. State whether or not the same climatic and topographical and geographical conditions exist there in the forests that exist here?

A. They do, only fifteen to forty and fifty miles east of here.

Q. 28. What then, is the only difference in the conditions as far as you can judge?

A. The great difference is on the portion south of Copperhill, which is badly damaged.

Q. 29. I mean what is the difference in climatic conditions and topographical conditions, if anything of that kind, is there anything preesnt here which *is not present here, which* would tend to injure the forests?

A. No sir, the topographical and climatic conditions are the same.

Q. 30. How far is the forests over there from these copper plants?

A. The nearest point is about twelve miles air line, extending from that to fifty miles.

383 Q. 31. To the southeast?

A. Yes sir, southeast.

Q. 32. Have you ever seen the smoke there from these plants on that property?

A. Yes sir, I have.

Q. 33. How long ago?

A. I have two days on my note book, if that is permissible.

Q. 34. About how long ago?

A. Around June 20th, around June 10th is one day. It was very dense, I rode up the canyon just after a shower, and when I got up there where the rangers were stationed, where I had ten men employed, after lunch the smoke came in so dense and thick I started out some guards to look for fire.

Q. 35. State what you did?

A. I sent two men to the top of the mountain to look *by* fire and by the time they returned the wind had shifted to the west and it cleared the camp.

Q. 36. How long did it stay in there?

A. About three hours.

Q. 37. Have you ever seen smoke in this section through here?

A. I have.

Q. 38. Have you ever noticed the timber and crops after the smoke had been on them?

A. I have not, particularly.

Q. 39. You never examined them?

A. No sir.

Q. 40. What day were you out with Dr. Hedgecock up here—did you go up on Barnes Mountain, the top of the mountain?

A. Yes sir, on top of the mountain.

Q. 41. Did you look over the Ducktown Basin and the plants?

A. I did with a field glass.

Q. 42. Could you see the plants?

A. From Barnes mountain we could see the Copperhill plant and stack but could see the Ducktown plant but not the stack, it looked like about a foot of the stack over the building from there. From Granny Marr Mountain the stack of the Ducktown plant was visible, just a little northwest of the plant.

Q. 43. The stacks of both plants were visible?

A. Yes sir.

Q. 44. State whether or not you saw any smoke coming out of the plants?

A. Yes sir, large volumes.

384 Q. 45. What was the volume coming out of the Tennessee Copper Company's stack, as compared with the volume coming out of the other?

A. Both about the same.

Q. 46. The Ducktown Copper Company's stack and the Tennessee Copper Company's stack?

A. Yes sir.

Q. 47. Which direction was the wind blowing that day?

A. Blowing to the west at that particular time.
Q. 48. Could you see the smoke traveling?
A. Yes sir, right across toward Frog Mountain.
Q. 49. That is in Tennessee?
A. Yes sir, in Tennessee.
Q. 50. North of the position you occupied?
A. Yes sir.
Q. 51. How far did that smoke travel from there, if you could tell?
A. It banked against Frog Mountain.

Cross-examination.

By Counsel for Defendant:

Q. 1. Are there not from ten to a dozen stacks in the Ducktown Basin from which smoke issues?
A. Probably there are, but I only noticed two in operation.
Q. 2. The two stacks of the furnaces and the stacks from the power houses are there not?
A. I should judge there are.
Q. 3. There are several mines in the basin?
A. Yes sir.
Q. 4. Of course, each mine has a power house and each one emits smoke, is that true?
A. Most likely it is, but the stacks which are most prominent are the stacks of the two plants.
Q. 5. The stack of the one plant is not near so prominent as the other?
A. No, it is not, it is not as high.
Q. 6. Is not the Tennessee stack 190 feet higher in the atmosphere than that of the Ducktown plant?
A. Probably it is, I have not figured it.
Q. 7. It is very much larger too, is it not?
A. Yes sir.
Q. 8. You don't know which one of them really produces the most smoke?
385 A. I do not.
Q. 9. You have no knowledge as to the amount of material consumed in the two plants, that is, relative amounts?
A. No sir.
Q. 10. You are not a chemist?
A. No sir.
Q. 11. You know nothing about the content of the ores?
A. No sir.
Q. 12. Relatively, how much more copper fumes in the smoke which comes from one than the other, of course, you don't know?
A. No.
Q. 13. Now, how long have you been in the forest service?
A. A little over five years.
Q. 14. Where did you get your education for that work?
A. Mostly in the field.

Q. 15. Did you ever attend any forestry school?
A. No sir.
Q. 16. Where were you first engaged in the work?
A. In California.
Q. 17. Did you ever read any works on *the* forestry?
A. Continually for the past five years.
Q. 18. Which works have you read?
A. Graves and Sargent and Schenck.
Q. 19. Is it not a fact that the Germans are the greatest experts on forestry?
A. They are so considered. I wouldn't say they are the greatest, but they are considered the foremost in forestry.
Q. 20. Have you read any translation of the German work?
A. I have in bulletins.
Q. 21. Do you understand German?
A. No, I don't read German.
Q. 22. How long have you been stationed here?
A. Continually for over two years, off and on for over three years.
Q. 23. Have you made any study of injury to forests from sulphur fumes?
A. No, I have not made any study of it.
Q. 24. Have you come in contact with this injury here in these forests, from the furnaces?
A. Only down in this section, not out in my country.
Q. 25. You say not out in your country?
A. Well, I have seen slight damage out there.
Q. 26. Not enough to count?
A. Not such that a novice could detect it.
386 Q. 27. How far is that out?
A. Thirty, forty and fifty miles.
Q. 28. You don't pretend you have any damages fifty miles.
A. I couldn't say we do. The people in that section claim that they have, but I have never made a study of the trees that are dead to find out.
Q. 29. People in a radius of seventy and one hundred miles claim their timber is being killed and the leaves browned by smoke?
A I never heard of any claim of smoke damage further east than Blairsville section, about forty miles.
Q. 30. You don't know what the trouble is?
A. They claim it is smoke effects up in there, Blue Ridge Mountain goes northeast of there and they claim the smoke comes in and banks up against the Blue Ridge Mountains.
Q. 31. But I say what may be the matter with any kind of vegetation or trees you have no idea?
A. No, sir.
Q. 32. You are not a botanist?
A. No, sir.
Q. 33. Have you made any study out here of any measure to protect the forests against smoke injury?
A. (No answer.)

Q. 34. Have you made any study of measures to protect forests against smoke injury?

A. I don't know that I have made any study of measures to protect them—I don't know that I have done so—possibly I could answer more intelligently if I knew just what you meant.

Q. 35. Suppose you answer it as you want to, you may know better how to answer it?

A. I don't know that I have taken any measures to protect it.

Q. 36. Have you made any study at all of how the forests can be protected against smoke injury?

A. The only way I ever read of would be to close the plants down like they have in the west.

Q. 37. I will read you from Elements of Technical and Legal Measures Against Smoke Injury, by Dr. Wislicenus, as follows: "The concentration or dilution i. e., the proportion of injurious to indifferent constituents is of decided significance in determining their effect. The greater the amount of acid to each cubic meter of smoke, the more difficult it becomes for the wind to bring it to harm-
387 less dilution, and the greater the distance and time required to bring this about. But where is this limit? This is an uncommonly difficult or scarcely soluble problem, but none the less important. It is soluble only to a certain degree and with certain premises granted. Stockhardt, Schroeder, Weiler, Sorauer and Remann and I have endeavored to come at the question experimentally. As a test plant in producing these artificial smoke injuries, the spruce was used for the most part; and correctly, because it is best adapted to the purpose, and is a woody plant typically sensitive to smoke."—Is it not your experience that fruit is very susceptible to injury?

A. Yes, sir.

Q. 38. "The former experimenters have worked with very primitive apparatus, and since their experimental plants were exposed to too unnatural conditions, the results did not agree among themselves and with the experience of practice. Hitherto Stockhardt's and Schroder's observations have been taken as authoritative, according to which, one volume of sulphurous acid in one million volumes of air applied as 235 fumigations in small glass chambers *is* 60 days caused on the spruce all marks of chronic injury. I have, with the valuable aid of assistants, Dr. H. Sertz, and Dr. F. Schroder, carried out experiments extending over several years, in a specially constructed fumigation chamber which exposes the plants to a constantly renewed air current having an approximately measurable content of acid, and thus far have reached the result, that—Gases, with one volume of sulphurous acid in 500,000 volumes of an indifferent gas, i. e., 0.0002 per cent by volume produced evident chronic injury to young spruces only after the lapse of a whole vegetative season. Besides individual specimens remain still in full vigor, so that we must assume that in nature the harmless degree is attained with this dilution."—Do you know anything about Dr. Wislicenus, is he an authority?

A. I think he is.

Q. 39. Do you agree with what he states in regard to this matter, from a reading of the subject?

388 By COUNSEL FOR PLAINTIFF: We except to the question on the ground, first, there is no evidence in this case on which to base the hypothetical question, as the matter is read into the record and relates solely to this matter, and there is no evidence to show that there is any specimen or condition such as he reads about in this territory. Secondly, for the reason the witness has not qualified as an expert and is therefore not in position to give an opinion on the matters read into the record. Third, for the reason there is no similarity in the conditions in question and those asked the witness, and the conditions in North Georgia.

Overruled. Appeal prayed and granted.

A. I am not a chemist and I wouldn't attempt to express myself on that.

Q. 40. You do say he is an authority on the subject?

A. I say I think he is.

Q. 41. I will read further, from the same works, as follows: "This dilution can, as laid down in Chapter II, be entrusted to the wind alone, only when the source of gas outlet is as free as possible on a plain or elevation. In a valley there is no reliance on this natural aid by blowing wind, and among the unfavorable coefficiency of situation discussed under II 3*b*, and C the natural wind current is distinctly inadequate. There special methods of dilution must be resorted to. Among the efforts in this direction, however, I must give expression to the conviction that in the last decade recourse has often been had to a false method. It has been generally thought possible to bring about sufficient dilution of the air by—

"Introduction of the gases into the higher air strata by means of higher stacks.

"One continually encounters this expedient in expert practice, as well *as* approving plans for new establishments as in actions
389 against existing sources of smoke. The above mentioned monograph of Hering recognizes only this method for diluting smelter fumes with large quantities of air. (Hering l. c. p. 40) High stacks. But since high stacks are very expensive and the cost of construction increases progressively with increasing height this method results in the centralization of chimneys into one or a few high stacks. In this hitherto recognized protective measure the Freiberg Smelter Works have accomplished the greatest feat by the construction of the highest chimney in the world at the Halsbruck Smelter. The construction of this gigantic stack over 144 meters (—472.44 ft.) high cost 300,000 marks ($75,000.00). Only people of unusual courage will dare climb to its higher part to test its condition or repair it. As it stands exposed on an eminence and commands the country for miles around, so it gathers the poisonous gases collected from the whole establishment to a distance of miles around. It transfers these gases to the unchecked uniformly flowing upper currents of air which possesses relatively little diluting power, exactly for the reason that they are essentially unchecked

parallel currents without eddies and without pronounced mixing tendency. It- effects were evident on the Tharaudt Spruce forest 10 kilometers (6.2 miles) from the giant stack, until a few years ago the acid content of the smoke was reduced to one half or one third by the above mentioned changes in operation."—Now, according to your observation, since you have been in this section here, is that not what results from the high stack, that it distributes the fumes over a much larger territory?

A. Well, I don't qualify as an expert, and I wouldn't want to express myself as to how the fumes carry.

By COUNSEL FOR PLAINTIFF: We except to that part of the question which was read into the record, certain matter purporting to be a translation, first, because there is no evidence that it is an accurate translation. Second for the reason that it is immaterial.
390 Third, for the reason that the witness has not attempted to qualify as an expert.

Overruled. Appeal prayed and granted.

Q. 42. Don't your common sense tell you that the high stack distributes the smoke much further?

A. Well, I might think so, and it might be possible that it does not.

Q. 43. Do you know anything about air currents at all?

A. I know a little, but I didn't come here to testify along that line.

Q. 44. Did you ever use the Intrement Borer?

A. I have seen it used, personally I have not.

Q. 45. That Intrement Borer is used by the Germans a great deal?

A. That is my understanding.

Q. 46. Do you remember who constructed the Intrement Borer, wasn't it a man named Pressler?

A. He is one of them.

Q. 47. I will read you from —— and Lindell, their works, and will ask you if you agree with them?

By COUNSEL FOR PLAINTIFF I want to except to the question and to the reading into the record of other matters which purport to be translations upon the grounds as above stated that the witness has continually stated he is not an expert, he has not qualified as an expert, and that read into the record will only tend to encumber and burden it and is useless, and is of no value as to this witness.

Overruled. Appeal prayed and granted.

By COUNSEL FOR DEFENDANT: I have a right to read from scientific works into the record, I don't care whether he knows whether any such follow exists or not. I have already proved this work by Dr. Hedgecock.

Q. 48. "Most to be recommended is the Intrement Borer constructed by Pressler, which was recommended for this purpose by Pressler in 1877. (See Russ) Has frequently used it in his
391 investigations, likewise testifies as to its excellency. More accurate directions for manipulation of the Pressler Intre-

ment Borer is found in Schwapeah Elements of Forestry, page 11."

By COUNSEL FOR PLAINTIFF: We except to that for the further reason that it is not put in evidence and because it is not an accurate translation from the original works.

Overruled. Appeal prayed and granted.

Q. 49. I believe you say you are not a botanist?

A. No, sir, I am not. I would like to answer that for you.

By COUNSEL FOR DEFENDANT: I will cross examine you when they ask you.

Q. 50. Now, Mr. Clarke, you have been over what per cent of the territory in North Georgia?

A. I guess I have been over fifty per cent of Fannin County.

Q. 51. Now, you have stated something about the forests here, something as a matter of fact, a very great part of the forest in Fannin County have been cut over?

A. I would not consider them cut over, they have been culled.

Q. 52. What do you call a cut over forest?

A. I consider when a mill has been in operation, and the timber, all the mature timber is taken off.

Q. 53. That is they have not left anything but the small stuff and under bursh?

A. Yes, sir, I consider that cut over.

Q. 54. Has not a very large part of Fannin County been culled?

A. A large part has, yes, sir.

Q. 55. When you cull a forest you cut down the largest trees?

A. Not always, they usually take out the most valuable species.

Q. 56. In doing that you necessarily leave a lot of limbs or laps in the woods, is that true?

A. Laps?

Q. 57. Yes, sir.

A. What do you mean by laps?

Q. 58. You come from East Tennessee and don't know
392 that, don't you know what the lap of a tree is?

A. You mean the lop and top.

Q. 59. I supposed all North Georgians and East Tennesseeans knew what the lap of a tree was, I mean the limbs and top. You call it lop?

A. Yes, sir, I call it lop.

Q 60. Of course, that dies at once and in a year or two the forest is burned over and it burns the laps or lops?

A. Yes, sir.

Q. 61. That causes much more damage to the timber right around there because those laps will create considerable fire?

A. Yes, sir.

Q. 62. Don't the North Georgia forests, do they not burn over from time to time?

A. Yes, sir, I think all these forests have been burned over at different times.

Q 63. That necessarily injures the forests?

A. Yes, sir, to a certain extent.

Q. 64. One of the very worst injuries to the forests, here in the forests of the United States, are they not damaged more by forest fires than any other one cause?

A. That is true.

Q. 65. Of course, there are different diseases in the woods?

A. There are.

Q. 66. Are there or not a number of diseases in the forests of North Georgia besides smoke fumes?

A. Yes, sir, I guess in the forests of the country there are some diseases.

Q. 67. Is it not a fact that all the chestnut trees in a great part of the Apalchian regions are dead from a fungus disease?

A. A great many have died and are dying.

Q. 68. Have you ever made any study of that disease?

A. Not particularly, no, sir.

Q. 69. Has your work required you to make a study of the diseases of forests?

A. Not in this section.

Q. 70. So you really have not made any special investigations of the diseases of forests in this country?

A. Only in the definite forests we have purchased.

393 Q. 71. Well, in June you had a forest fire on the Government property, did you not?

A. Yes, sir, a very small one.

Q. 72. How many acres was burned over at that time?

A. About 175 acres of Government land and 50 acres private land.

Q. 73. Of course there are dead trees all through the forests?

A. Yes, sir.

Q. 74. There are dead trees in the North Carolina forests?

A. In all forests.

Q. 75. What species of trees are dying on the Government properties in North Georgia here, north and east?

A. I have not worked north and east the past three years and therefore, I don't know.

Q. 76. What trees were dying previous to that time, in that section principally?

A. North and east, North Georgia, the chestnut has been damaged.

Q. 77. That is supposed to be by a fungus disease, is it not?

A. I think it is.

Q. 78. Are not the white pine dying through that section also?

A. Probably so, but I didn't spend enough time examining the trees in the North Georgia section.

Q 79. Is not the hickory dying some?

A. I didn't investigate it.

Q. 80. You don't know anything about the Cumberland Mountains that is the mountains in Middle and West Tennessee?

A. No, sir, I have never worked there.

Q. 81. Now, coming to this matter of the section around Copper-

hill here, did you ever make any special study of the trees that have been affected by smoke fumes?

A. The last three days, last Friday, Saturday and Monday I was examining with Dr. Hedgecock and Mr. Johnson.

Q. 82. That is the first time you ever had made any study of the effect of fumes on trees, is it not?

A. The first time I was ever through there for that purpose.

394 Q. 83. Before that time you had passed through and glanced at the trees?

A. I had been through several times looking at them.

Q. 84. So you do not now qualify yourself as an expert on the effect of sulphur fumes on trees?

A. No sir.

Q. 85. You wouldn't undertake right now to swear what particular tree has been affected by sulphur fumes and what tree has not, would you?

A. No sir, I would not qualify as an expert from that standpoint.

Q. 86. Don't you know that some times it is practically impossible to state whether or not a leaf or tree is affected by sulphur fumes or something else?

A. Yes sir, without microscopic examination, or test.

Q. 87. Now, is this true, that if that part of Fannin County lying near to Copperhill has all been cut out, nearly all of it,——

A. It has been cut out, but still a lot of timber standing up there.

Q. 88. Beginning right around Copperhill, of course, all that has been cut out and destroyed many years ago?

A. Yes sir.

Q. 89. Is there not very considerable second growth timber now up in that vicinity?

A. None of recent second growth.

Q. 90. What do you mean by recent second growth?

A. No real young trees there.

Q. 91. What do you mean by real young trees?

A. Trees six or seven or eight or ten years old.

Q. 92. Do you mean to say there are no bushes, one or two years old?

A. I didn't say none, but there are not many.

Q. 93. Well, there is a second growth there, how old is it? That which is there?

A. Well, certain portions you will find second growth coming along, but the damaged portion you don't find it.

Q. 94. How near to Copperhill do these conditions exist?

A. Right around there, for four or five miles. I don't say in all directions, but in the northwest and,——

Q. 95. Is there not a good part of it where there is a nice

395 second growth coming on?

A. Not on south exposures.

Q. 96. Is there not a considerable portion right through there where you don't see any evidence to-day of injury from the sulphur fumes?

A. Probably a few sections, I wouldn't be able to say, I don't qualify along that line.

Q. 97. Don't you know that right around those furnaces there are gardens that look perfectly thrifty to-day and have been during this whole summer?

A. I saw a few small gardens, I wouldn't say they were thrifty.

Q. 98. Did you examine them?

A. No sir, I saw one corn patch, and I could jump over any stalk in the patch.

Q. 99. Do you know what was the matter with it?

A. It didn't show a thrifty growth.

Q. 100. You have been through parts,—various parts of this country where you have seen corn of that kind?

A. Not to compare with that.

Q. 101. Did you ever see a corn patch that was doing no good?

A. Yes sir.

Q. 102. A thousand miles from here?

A. Yes sir,—not a thousand miles.

Q. 103. Did you ever see anything like that, places where the corn was doing no good a thousand miles from here?

A. No sir. I will have to say right here, the only corn section I have ever been in was in Indiana, Iowa and Illinois.

Q. 104. They don't have anything there but good corn?

A. I have not seen anything but good corn.

Q. 105. You have not seen poor corn patches in Indiana?

A. No sir.

A. No sir.

Q. 106. Now, Mr. Clarke, these smoke fumes don't affect the underbrush and vegetation that grows under close to the soil very much, does it?

A. It affects it right around the section where the sulphur fumes kills it all.

Q. 107. In these parts it has killed that?

A. None there to-day, so naturally it kills what comes along.

396 Q. 108. Will you swear those sulphur fumes killed it this year, is it not a fact that soil has been stripped of all vegetation for a number of years, and it will not produce anything?

A. You said it was producing fine corn in this section.

Q. 109. I am talking about right around the smelter where it has not been fertilized, is it not a fact that soil will not produce anything?

A. I have seen some old grass coming, naturally, something didn't kill it and other things would naturally come too.

Q. 110. Well, if grass is growing it don't kill everything?

A. That is sage grass, it don't amount to anything.

Q. 111. It is a vegetable life of the poorest sort?

A. Yes sir.

Q. 112. Take the forests in Fannin County, is it not a fact those fumes affect a very little the undergrowth or underbrush, but when-

ever it does affect anything it is the larger trees, the trees having larger foliage?

A. That might be so in the Southern part of the County, up around the north part I think not, it affects everything.

Q. 113. Tell me one place where it has affected the underbrush?

A. Around Pierceville and Medola.

Q. 114. When did you notice that?

A. Last Friday and Saturday.

Q. 115. How many acres of underbrush where you noticed the underbrush was affected?

A. Hundreds of acres.

Q. 116. Did you get out and travel around and go around on hundreds of acres to see it?

A. I walked through hundreds of acres.

Q. 117. You went in an automobile.

A. I got out.

Q. 118. How far did you get from the road?

A. Probably one hundred yards, you could go one hundred yards and walk through a hundred acres.

Q. 119. But you didn't do that?

A. Yes sir.

Q. 120. You mean that the smoke showed damage on all that underbrush, undergrowth?

A. Yes sir.

Q. 121. Over all of it?

A. Yes sir.

Q. 122. Are you not going mighty strong?

A. No sir.

397 Q. 123. You noticed everything as you passed along, the briers, and the underbrush of all varieties?

A. That is what I was there for.

Q. 124. And you saw that over whole fields of it?

A. I didn't say that.

Q. 125. It affected all forms of vegetation?

A. I didn't say that.

Q. 126. What did you say then?

A. I say it was all affected, I didn't say every leaf.

Q. 127. Some had every bush affected?

A. No, but some part of every bush, the whole thing in general was affected.

Q. 128. The whole thing in general was affected?

A. Yes sir.

Q. 129. Please describe what you mean by that, the whole thing in general, but every kind of brush wasn't.

A. No thrifty bushes.

Q. 130. Not a thrifty bush in that section?

A. I don't think in two miles coming along there, along that road, facong the smelters, I don't think there was a bush in the whole place that was thrifty.

Q. 131. Not a one?

A. I don't think so.

Q. 132. Not a thrifty field of grass?
A. I don't believe there is any grass there, I didn't see any.
Q. 133. Not a thrifty corn stalk?
A. I didn't say that, there is some good corn there.
Q. 134. Not a thrifty bean?
A. Yes sir, I guess there is some good beans there.
Q. 135. Beans are more susceptible to the smoke than brush?
A. They claim that.
Q. 136. If the beans were thrifty, what was the matter with the underbrush, how can you explain that?
A. For the same reason that you explain thrifty gardens right close to the stack, they fertilize them well.
Q. 137. I believe you claim there are not thrifty gardens around there?
A. I didn't see any gardens.
Q. 138. That is there is nothing absolutely thrifty in the whole section?
A. I didn't say that.
398 Q. 139. What is there thrifty in there?
A. Perhaps there are some gardens getting along fairly well, I said the exposures facing the smelters were all damaged.
Q. 140. Every bit of it?
A. Yes sir.
Q. 141. What about the peach orchards there in and near Isabella, were they affected too?
A. I saw one peach orchard there that—it looked to be seven or eight years old, wasn't bearing.
Q. 142. Anything the matter with the foliage?
A. No, I don't think so.
Q. 143. Where did you see that peach orchard?
A. I couldn't describe its exact location, it is not facing toward the two stacks.
Q. 144. So it is there is not a thrifty bush or anything whatever in that whole section, according to you?
A. I didn't see but one peach orchard, I said that it didn't have the appearance of being damaged. Everything has been damaged to a certain extent.
Q. 145. You didn't see that corn field across the river within a mile of the Tennessee Copper Company's plant?
A. I saw several corn fields.
Q. 146. You didn't see Mr. Gillens pea crop down along the road between here and Copperhill, did you?
A. I don't guess I did.
Q. 147. You didn't see a thrifty crop on all your travels?
A. I am not testifying as to crops, I didn't examine any.
Q. 148. Why, didn't you state you looked at those crops?
A. I suppose I looked at the crops, I was just examining the timber, I was not supposed to examine crops.
Q. 149. The fact is, you were under the guidance of Mr. Vestal?
A. No sir.
Q. 150. He was along?

A. On the second day.
Q. 151. You were not looking for anything to see except smoke injury?
A. Looking for smoke injury—yes sir.
Q. 152. You were looking for injury?
A. Yes sir.
Q. 153. You were not looking to see anything except smoke injury?
A. We wanted to find out if anything was injuring the forests.
Q. 154. You had your whole eye strain and attention
399 solely upon injury, not looking for things that were not injured, is that a fact?
A. Mostly, yes sir.

Redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. State whether or not you went to find out conditions in the forests?
A. Went there to find out conditions and if there were any smoke injuries in the forests of North Georgia.
Q. 2. To see if there was any smoke injury?
A. Yes sir.
Q. 3. Now, I will ask you to state whether or not you saw any brush or undergrowth that appeared to have come out this year?
A. No, I couldn't say that I saw any that appeared to have come out in two years.
Q. 4. Now, about the Intrement Borer, do you use that in your service with the United States Government, in any kind of service?
A. Yes sir, it is used.
Q. 5. For what purpose?
A. We mostly use it in our service to determine the age of the smaller trees.
Q. 6. When you want to determine the growth of a tree, natural growth, state whether or not you take a section of the tree? Sections such as that?
A. Yes sir, in our investigations we always take cross sections.

The next witness, WILL S. SHIPPEN, having first been duly sworn, testified as follows:

Direct examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. How old are you?
A. Forty eight years old.
Q. 2. Where do you live?
A. Ellijay, Gilmer County, Georgia.
Q. 3. How long have you lived there?
A. Lived there for eighteen years.
Q. 4. What is your business?

A. Lumber and timber.

400 Q. 5. How long have you been in that business?

A. I have been in that business for twenty-seven years. And my father before me was a lumberman, and he lived to be eighty seven years old, and he was a man of broad experience and handled a great deal of lumber, and I had his experience and teaching to start me out.

Q. 6. Did you ever engage in the lumber business outside of Georgia?

A. Yes sir, I cut four hundred million feet in Forest County, Pennsylvania, and had mills in Kentucky—Do you want my experience in the forests?

Q. 7. No, just speaking the milling business then, state what experience you have had through the forests of this country, the United States and Canada?

A. Well, I have made numerous trips examining the forests in Pennsylvania, on the Pacific Coast, say from Washington down to California, I have been in nearly all those states there, I have been in the inland empire of Idaho, and I have been in the forests of California, and have been in the forests of Mexico and Canada. I have been through Maine and spent two months last summer looking over two hundred thousand acres of spruce and hardwood in Maine, and have been over various areas in the United States and some in Mexico.

Q. 8. State whether or not you have bought land extensively in North Georgia, and timber rights?

A. Yes sir, bought quite a little, something over one hundred eight thousand acres, and fourteen thousand additional about one hundred twenty two thousand acres. I have looked over and examined a great deal more that I didn't purchase.

Q. 9. How much land do you now have in North Georgia?

A. Shippen Brothers Lumber Company owns one hundred eight or one hundred ten thousand acres, I am the President.

Q. 10. Is that company incorporated under the laws of Georgia?

A. Yes sir.

Q. 11. Who owns the stock?

A. Various stockholders throughout the north and south, and I also am interested and own a half interest in some twelve

401 or fifteen thousand acres additional, outside of the Shippen Brothers Lumber Company, in this same territory.

Q. 12. Is that timber land?

A. All timber land, bought for that purpose.

Q. 13. Are you acquainted with the methods of lumbering and milling and as to the cutting of forests?

A. Yes sir, I think I am thoroughly acquainted with the methods of lumbering and getting out logs and turning them into manufactured lumber, and then milling up all the manufactured lumber, in all these various stages from the stump to the consumer, in the northwest and south, and in the cypress swamps and yellow pine forests. And in the hardwood forests of the Central States and the white pine forests in the East and Pennsylvania.

Q. 14. Have you supervised in a personal way, or have you general supervision of the work in your forests on your own property here?

A. Yes sir, I have laid out the work and have general supervision of the whole thing.

Q. 15. What methods have you used in cutting your timber as to the preservation of the forests?

A. Well, when we were lumbering in Forest County, Pennsylvania, we had a growth of timber there that was practically all one age, and if you go into the forests there and cut down a tree you will find that it is practically the same age as its neighbor. They were not all the same size, but near the same age. Well, after you cut that timber off, if you wanted to reproduce, you would have to plant the whole thing, you could not use selective cutting there. After we finished that timber there, we begun to look the whole country over to find a location where we could use selective cutting and in that way perpetuate our supply of timber, so we would never exhaust our cutting, and we searched the whole Appalachian, down into the Blue Ridge Mountains and located here, because we thought conditions here were more ideal for that particular purpose. The reason of that was that all these forests here, that in the
402 forests here we have all stages of growth from the little acorn to the old matured tree three or four hundred years old. Here we can go into the forests and cut out the timber that is ripe and remove the timber that nature has planted two hundred years ago. Those conditions are different from the conifer forests in Pennsylvania, because there to start a forest you would have to plant the seed and wait three hundred years for a crop. Down here, nature has done that for maybe two or three hundred years ago, and for that reason our holdings in this territory gives us ideal conditions for this business.

Q. 16. Have you used selective cutting?

A. Where we have cut our own timber we cut only mature and thoroughly ripe trees and leave the smaller trees on the land, and when you cut out the older trees it removes the shade and the younger trees grow more rapidly and produce another crop of timber. So, we can harvest a timber — on our land the same as a farmer harvests a crop of corn on his land.

Q. 17. You say you came here eighteen years ago?

A. Moved here eighteen years ago, we looked over this property nineteen or twenty years ago.

Q. 18. What was the condition of the forests eighteen years ago?

A. The conditions were healthy. The trees showed a regular growth and the forests had an energetic, vigorous look about them.

Q. 19. Did that condition influence you in coming to this country?

A. Assuredly. We examined into the rainfall here, we examined the soil, and conditions for our business, for timber growing were good, since we have the heaviest rainfall of any section in the United States except a small area on the Pacific Coast. Rainfall is very necessary for the growth of timber. We have

a good soil which is another condition for the growing of timber. We have the richest flora of any section in the United States. We have the white pine which they have in the far north, and we also have the southern hardwood. Those conditions are brought about by the elevations here. Our timber grows anywhere from thirteen hundred feet — forty five or forty four hundred feet
403 elevation, and the elevation gives us a climatic condition that allows a white pine and hemlock to thrive here.

Q. 20. From your experience in the forests business, and lumber business, state your opinion of this section of the country as a forest growing section?

A. Well, I have found here as much as an inch and a half annual growth in poplar, an inch and a quarter on white pine and three quarters of an inch on oak. Those are phenominal growths and I don't think they have been equaled anywhere in this country. Of course, that is not a regular growth, those are something extraordinary. The regular growth would possibly be half of that with the moisture and soil and long growing seasons and sunlight in a favored tree.

Q. 21. Then what is your opinion as to the entire section, as a forest growing section?

A. It is the best I have known anywhere, I never have seen any such growth anywhere as here.

Q. 22. What are the conditions in the forests at the present time as compared to eighteen or nineteen years ago?

A. It is very much changed, the timber don't have that healthy look. If you start at the furnaces at Ducktown, you can take a zone there, practically everything is denuded, you can go a little further out and you will find timber showing the effects of these fumes. You go a little further and you will find the timber not so much affected. Still further you will find the leaves browned, and further out you will find only certain species that was affected by the fumes, and when you get beyond that you will find only an occasional tree, and when you get back thirty or forty miles, you often find only one or two species on the hillsides where the smoke gets to it. As you travel toward the mines conditions get worse and as you go away they get better. The forests are unhealthy and — sickly condition. If you cut into the tree you will find the growth has been decreased, and if interfere with the growth of a tree the tree will die.

Q. 23. Have you been familiar with the history of this country since the Ducktown Copper Company and the Tennessee Copper Company began operations?

404 A. Well, I couldn't say that.

Q. 24. Well, for the past eight or ten years?

A. Yes sir, I have been thoroughly familiar with it eight or ten years. I think when I came here one of those companies were working there, using roast heaps, but that couldn't affect the forests in our territory.

Q. 25. How far is your land from the plants of the companies?

A. Some of our lands border on the Tennessee line and some are

thirty five miles from the Tennessee line, I would say they extend from right at the furnaces almost to thirty five miles away.

Q. 26. Have you been up to the plants of the two companies?

A. I have, repeatedly.

Q. 27. Have you examined the plants and gone through them?

A. I could hardly say I have been through all of the Tennessee Copper Company's plant, I don't know that I have been through it all, I have been through a large portion of the smelters, and have been about there where they mined the ore. At the Ducktown Sulphur Copper & Iron Company's plant, I have been at their plant, but was never inside, further than to travel around on the outside and see from that point.

Q. 28. Are you familiar with the odor of the smoke that comes from the stack?

A. I certainly am, I know it thoroughly, I have smelled it out in the timber and begun at the plant and all through the territory.

Q. 29. Have you made a study, and to what extent, if any, of sulphur dioxide fumes?

A. I have had quite a little experience with sulphur dioxide. The first experience I ever had was with the manufacture of ice in the City of Louisville, Kentucky. We used the Roual and Pictet process. We got along all right with that gas until there come a leak and that changed the gas. The fumes got out and destroyed vegetation around there, killed an old cat and nine kittens in the engine room and asphyxinated the engineer. When I was investigating this matter first as a member of the Georgia Commission, we first had this matter up, I insisted that as we had made sulphuric acid ac-
405 cidentally in Louisville, these copper companies could do it on purpose if they tried. It brought about these same conditions in Louisville where we made it and it put us out of business.

Q. 30. Have you made any investigation into or study of smoke on the forests, trees and vegetation?

A. Yes sir.

Q. 31. Have you seen the smoke from those plants in any section of Georgia here?

A. Well, I would like to state first that these furnaces,——

Q. 32. Just a minute, have you seen it or not in this section?

A. Yes, sir, repeatedly.

Q. 33. Have you ever been up on the mountains and looked toward the furnaces?

A. Yes sir.

Q. 34. Have you seen the stacks from the position you occupied?

A. Yes sir, close at hand and quite a distance off, I had field glasses.

Q. 35. Have you seen smoke coming from these stacks?

A. Yes sir, repeatedly, both of them.

Q. 36. The Ducktown Copper Company and the Tennessee Copper Company?

A. Yes sir.

Q. 37. Have you seen it blowing in a direction away from Georgia and toward Georgia?

A. I have seen — blowing every direction of the compass, you might say.

Q. 38. Now, if you will go on and start there at the plant, and trace the smoke right down in this section,——

A. I have seen it coming out of the stacks from the hills there, and have observed it coming up right at the plant and have observed it from the mountains close by, and from Frog Mountain, from quite a number of different mountains, from Bailey Mountain and from Flat Top and from Rocky Face, and from Bald Mountain, and from other points lying west of Blue Ridge here, and on this hill here where they have a tank half a mile from where we are sitting, I have walked that and it depends entirely on the currents of air as to which way the smoke would travel, and what becomes of it. If the air is still it goes up for quite a distance almost straight up in the air, and then it drifts off with the air currents whichever way the currents of air
406 are moving. The two plants, if the air is blowing rapidly, the smoke will finally come together. I have never seen it where you could follow it with the eye for several miles after it left the plants that it did not get together. It seems to have an affinity, and seeks the company of the other volume of fumes.

Q. 39. Do you know the specific gravity of sulphur dioxide?

A. It is 2.21 as compared with atmospheric air.

Q. 40. What effect would that have on the sulphur dioxide, would it make it rise or come down, describe that?

A. This sulphur dioxide coming out of the furnaces is very hot, copper melts at 2,200 degrees Fahrenheit.

Q. 41. Or Centigrade?

A. Fahrenheit. Now, this sulphur dioxide is expanded 1/270 of its diameter for each degree of heat applied. On leaving the furnace stack at 2,200 degrees it will be expanded as many times as 270 is contained in 2,200. That is about eight times its natural condition. If it has the same degree of heat all the way, and in that condition it goes out into the air like a balloon, and will go until it loses that heat. Whichever way the wind is blowing it carries that gas off with it. As soon as this gas is cooled it becomes heavier than the air and settles down toward the earth, because the gas is heavier.

Q. 42. Does it seem to seek*m* the lower places?

A. It seeks the lower places, falls toward the earth. From the high hills you can see the whole valley; you can see the fumes leaving the stack and going off. The best way to see the conditions in there if you want to get a good view would be to have a flying machine and be up in the air and trace it right from the stack.

Q. 43. Are you familiar with the topography of this country?

A. Yes sir.

Q. 44. Does or not the smoke from those plants seek the gaps and waterways?

A. It will follow, the air has currents just the same as the currents in the ocean, and seems to have certain defined routes or ways it travels. Which ever way the wind is blowing the smoke will
407 travel. Some sections seem to be more affected than others, because the air currents blow through certain valleys and along certain ways.

Q. 45. State Mr. Shippen the difference in the condition of the timber and plant life generally on the sides of the mountain and ridges facing away from the Ducktown Basin, and between those which face north, or toward the basin?

A. Ordinarily the best timber stands on the north face of the mountains, because at that point there is more moisture, and the fire goes through there less, does not burn up the leaves, and the leaves are nature's way of fertilizing the forests lands. If the leaves are left there to decay and rot on the ground it builds up that ground and the north sides being away from the sun have more moisture, and it is where you find very much the better soil, and the best timber. But now, in the country with us, where it is facing the north, the smoke comes there and does much more damage on the faces of the mountains and ridges. They are more exposed to the furnaces generally than the other side, but that is not always true.

Q. 46. Have you or not seen the smoke on the north sides of the mountains?

A. Yes sir, I have seen it there and have smelled it there.

Q. 47. At that time what would be the condition of the south sides?

A. They would be free from the smoke. The sun sometimes helps to dissipate those fumes, sometimes breaks them up, it will stay with us longer if it is a wet day than if the sun is shining bright.

Q. 48. Describe the effects of sulphur dioxide, of this smelter sulphur dioxide on plant life—on forest trees first?

A. It crisps up the leaves, gives them an appearance as if one had placed them near a hot stove, looks like the leaves had been held too close to a hot stove. Dr. Hedgecock had some exhibits here showing the conditions, and the appearance of forest leaves when affected by the fumes.

Q. 49. At what season are the leaves most susceptible to injury?

A. Of course, when they are young and tender it hurts
408 worse than any other time, because at that time of the year the leaf is full of sap, and puts forth its tender shoots and the fumes do greater damage then than any other season, but the leaves show the worst damage in August and September of the whole season.

Q. 50. Is it a natural condition for the leaves to fall to the ground in June, July and August?

A. No sir, something very unnatural when those conditions prevail in these mountains.

Q. 51. State if you have examined the sections here that we have, have you examined the sections here for that condition?

A. I have not been in the territory that Dr. Hedgcock and Mr. Clarke testified about, but I have been in considerable territory south of here, and some east of here and they have the same conditions as they spoke of here.

Q. 52. The same?

A. Possibly not so much so.

Q. 53. That is further away?

A. Yes sir, but the trees were injured. I have seen it back on Amacola, if you have got a map here—I seen it here, smoke fumes away up here (Indicating) this past month.

Q. 54. What effect did it have on the forests?

A. Excuse me, hadn't I better get that Amacola in here.

(It is agreed that Amacola is about thirty miles from the furnaces.)

A. I was camping there last month and repeatedly smelled the smoke there and saw it in the landscape and all about us. I noticed the damage and noticed particularly there on the hickory timber that is seemed to be one of the first wood that is affected.

Q. 55. That is not in the zone of acute injury?

A. I would hardly say so, in a zone where it has been affecting certain species of timber. That zone was around Ellijay some six or seven or eight years ago, and south of Ellijay.

Q. 56. What effect on a forest does the injury or destruction of the leaves have?

A. It seriously interferes with the growth of the tree, that
409 of course, depends on the time that leaf was destroyed. Of course, if the leaf has performed its natural function and has been on the tree, say, for half of the season, the effect on the tree wouldn't be near so great as if it were killed when the leaf was first putting out, when it was just maturing or when it was doing its rapid growth. If it is killed later in the season it wouldn't hurt the tree near so much, because then it had already performed the work for which nature intended it.

Q. 57. If the tree has already begun to lose its leaves for the winter season, the damage wouldn't be so great?

A. It depends entirely on the time they are injured as to how much it will hurt the tree.

Q. 58. That is as to the future of the tree?

A. Yes sir.

Q. 59. What effect does injury to the leaves of trees have upon the forests generally?

A. Well, of course, if you take the injury on every tree,—I don't know that I understand,——

Q. 60. I mean as to the protection by shade of the other tees?

A. Trees naturally, I wouldn't think it would injure them, because trees want light.

Q. 61. But as to the protection of the tree from fumes which will come in?

A. Of course, when you remove any shade that exposing the tree remaining to more visitation and heavier visitation of the fumes. Like if you destroy the large timber first, then the fumes could get in and attack the smaller growth.

Q. 62. Then the more destruction of leaves, the more liable it makes the other trees to injury?

A. No question about that.

Q. 63. Mr. Shippen, how often have you noticed the smoke in this section of the country?

A. I have been out in Georgia in the woods quite a little of late, and from what I have seen around Ellijay, I have seen so many times,—I have seen the smoke present this year more than I have ever known it before, I never have seen the smoke with us as often. It commenced in the early spring and has kept up all this
410 summer. I have seen vegetation and seen beans and peas damaged and killed on my place there in a single night. I have smelled the fumes in there the night before and the next morning they would all be crisped up and ruined, as if frost had hit it and damaged it. I will not raise one third of a crop.

Q. 64. Can you or not mention any times when you have seen that smoke in there?

A. I didn't make any note of it, I saw it in there in June, the early part of June, I remember very well. I saw it there in May, and I have seen it there this month, I saw it there in July.

Q. 65. Are you familiar with the rules of the Board of Arbitrators, as to,——

A. The only way is what I have heard—and I have read their written rules.

Q. 66. Then do you know what the requirements of the Board are as to dates?

A. They require them to file their application for damage,——

By COUNSEL FOR DEFENDANT: I except to that as the rules themselves would be the best evidence,—I don't care, just go on.

Overruled. Appeal prayed and granted.

A. They require them to file their claim and swear to their claim within fifteen days from the time the injury occurred, and state the day on which the injury occurred.

Q. 67. Have you noticed or not the garden and truck patches and field crops?

A. I have, I noticed a rye field, belonging to Dr. E. W. Watkins, went into the rye field of Dr. Watkins that lies in the valley immediately in front of my home. I have also noticed rye that we planted in my chicken runs, on our place, where I kept the chickens there at home.

Q. 68. What are the effects of sulphur fumes on that?

A. I have noticed the large rye field right in front of my home. I live upon the mountain and this rye field is in the valley right in front of me. I saw the smoke settle in on that just about the time the rye was in bloom, I was sure then that the rye would be just about ruined. A short while ago, the rye,——

411 By COUNSEL FOR DEFENDANT: Just tell what you saw, not what you were sure was going to happen.

A. When cutting that rye I went there and examined it as they were putting it up. The heads were large but they were chaffy and didn't have three grains where there ought to have been twenty five or thirty. I don't believe the man got his seed back. I am sure that rye crop was cut off four-fifths from what it would be if the smoke had not got in on it. The same was true in my rye that matured in the chicken runs. The straw grew up almost to my

shoulders, stood away up, but it didn't have any rye to speak of at all. I particularly noticed the roasting ears at my place.

Q. 69. What was the condition of them?

A. I got after my boy, a colored boy, for pulling the corn before it was in roasting ears. I went out with him to show him how to do it, and I pulled off some corn some of the ears and I got worst samples than he did. When the silks on my corn are black, turning black, you know that the roasting ears are about ripe.

Q. 70. What effect does sulphur dioxide have on silks and tassels of corn?

A. It turns it black. I meant the silks on the roasting ears.

Q. 71. What effect does it have on that?

A. Turns it black prematurely. The silk naturally turns black when it has accomplished its work.

Q. 72. Do you know anything about the condition of farms around here this year?

A. I don't much about the condition, but I have heard a good deal of complaint.

Q. 73. Mr. Shippen what is the condition of the section of country immediately surrounding the plants of the Ducktown Sulphur Copper & Iron Company and the Tennessee Copper Company?

A. Well, there is a map there that was made when I was out making this investigation before.

Q. 74. Refer to that.

A. Here is a map of the territory that was made by the Department of Forestry, by Mr. Patterson, who was sent down here to make an investigation in behalf of the State of Georgia in
412 this original case.

Q. 75. When was that?

A. I don't remember exactly the date, but I think it was in 1906.

Q 76. Was you with him?

A. Yes, sir, I went with him when he made this investigation, and in the territory there which is on the map, on which he shows the various zones injured at that time.

Q. 77. Are they shown on the map?

A. Yes, sir, there are three different zones he shows here.

Q. 78. Could you state approximately when the map was made?

A. It was made in 1906, if I remember correctly, somewhere near that date.

Q. 79. Now, in the section marked by close parallel lines, white parallel lines immediately around Isabella, and the point marked McCays, state what was the condition of the land and timber, etc., there?

A. Well, that condition was practically destitute of forest growth.

Q. 80. Have you seen that?

A. I have.

Q. 81. What is the appearance of that land?

A. Well, that section looks as barren as the Sahara Desert.

By COUNSEL FOR DEFENDANT: Have you ever seen that?

A. I have seen pictures of it, by great artists.

Q. 82. In the part marked with more distinct parallel lines,——

A. Do you want me to testify as to present conditions?

Q. 83. Yes. Just commence and tell conditions at the present time.

A. In this next section?

Q. 84. Describe the conditions of to-day.

A. Both of them are as they were at that time,—both are a little worse, but the same conditions prevail.

Q. 85. Coming back to the first zone there, what is the color of that land there, is it a loam color or what?

A. It is more of a red color. The forest at one time must have had a fine top soil, but most of this has disappeared, has been
413 washed away and silt and rocks and gravel are left. It looks as if the whole thing is dead. The bacteria, land to produce must have bacteria in it, and it seems as if the bacteria is not in this land, and it will not produce plant life and vegetable life without bacteria.

Q 86. Can a plant live without bacteria in the soil?

A. No, sir. That is the way our mountains are fertilized has more live bacteria than anything else.

Q. 87. To what extent has that land eroded?

A. It is washed in deep gulleys, all the ditches and streams are filling up, gut deep mud in them, it washes from the hill sides until it almost runs mud, runs red mud in that territory, washing away rapidly. Then the streams have filled up in lots of places with clay and mud.

Q. 88. Does that effect the flow of the water?

A. Yes, sir, it comes off of the hill like water off of a house, the vegetation all disappeared and it does not hold it back and let it penetrate the ground like it does in the forests, but runs off like a house roof.

Q. 89. Does that section which you have described extend over the Georgia line?

A. Yes, sir.

Q. 90. And into the State of Georgia?

A. Yes, sir. I have not examined that closely recently, I have not been through that territory as much as I was then, but two years ago I was up there and at that time it was about where it was, or maybe a little further into North Georgia.

Q. 91. The second zone there described, that is indicated by wide parallel lines?

A. The second zone is,——

Q. 92. What does that zone indicate?

A. The area of serious injury.

Q. 93. Is that described on the map?

A. Yes, sir, that has been correctly portrayed, and there in that district there is a great deal of timber that is killed, but you will find what we call in the woods staghead trees, trees that have been injured in the top and are trying to live. The life of the
414 trees have been badly hurt, and nature is trying to take care of it. If you cut off the moisture from the limbs above, the supply of moisture, in order to try to save the life of the limbs be-

low, there not being enough to supply the upper limbs, they will die. It is natural for a tree, like a human being, to try to protect itself.

Q. 94. That third zone there, describe conditions there?

A. The third zone extends, I should say that is leaf injury, that is the zone of least injury, and I have seen that extend eighteen miles beyond where it is located at that zone. It is in the Amacola territory where I saw this leaf injury, that is eighteen miles, at least.

Q. 95. You mean Amacola Mountain is beyond the limit shown on the map?

A. Yes, sir, eighteen miles from the zone shown here on this map. Now, at that time, I don't know that I altogether agree with this map at that time, because I found in certain trees here, I found heavy injury. Heavier injury than was shown among certain species outside of this zone of leaf injury. That was confined to the chestnut oak and hickory and some of the hemlock and some white pine, but now the leaf injury zone is extended in all directions.

Q. 96. How much hemlock is there in this country now?

A. In certain sections where it is protected by large mountains, like on Jack River, there are large forests of hemlock, but even there it is being browned by the fumes.

Q. 97. Is this country where hemlock would do well?

A. Yes, sir, there was lots of it at one time.

Q. 98. How much in this section?

A. It is practically all gone. As you pass along over the railroad between here and a point on the river down here, McFarland, along the line of railroad, I see that it is killed by smoke as I pass along.

Q. 99. Is the absence of hemlock due entirely to lumbering?

A. No, sir, hemlock has not been worth much in this section and because of that it has not been cut out so much, because the cost of cutting it and manufacturing it into lumber prevented lum-
415 bermen from handling much of it. I have here a sample or specimen or the destruction by fumes on the hemlock.

Q. 100. Will you file that map and make it Exhibit A to your deposition?

A. Yes, sir. Now this are- of leaf injury has extended very greatly in all directions as laid down on this map.

Q. 101. What is the conditions, speaking from your experience as a lumberman and timberman, and your experience in and through the forests, what is the condition of the forests in North Georgia, as compared with other forests of the United States?

A. Why, the nearer you get to the Ducktown Copper plant and that territory, the nearer those fumes you get, the forest- are sickly and unhealthy. The trees are inferior to what you see in other parts of the country, unless something unusual has hold of them. I have seen other forests suffering from certain troubles, but you could find out what it was. I have seen trees in Maine, and at Valley Forge, where they had blight, but they could cut down those trees and find out what caused it.

Q. 102. Has the Government bought tracts of land east and north of here?

A. Yes, sir, about thirty five thousand acres east of us, as I remember, eighteen or twenty miles from this point. They have bought some land over toward Blairsville some twenty six miles from here, and I think they have recommended for purchase, I don't know how many acres, but quite a large body of land, they have acquired from the Consauga Lumber Company and also land northwest from here, and also acquired the Prendergast lands in Polk County, north of here.

Q. 103. Mr. Shippen, are the forests in North Georgia in a healthy normal condition?

A. Decidedly they are not.

Q. 104. I will ask you to state whether or not there is any condition present in these forests to which their unhealthy state can be attributed except from the fumes of these plants?

A. None that I could ever be satisfied but that for the least ten years.

416 Q. 105. Have you gone into the forests and searched and hunted for something else?

A. I have repeatedly.

Q. 106. Have you sent out your foresters and woodmen in the forests for that purpose?

A. I have.

Q. 107. Have you devoted much of your time to the study of conditions?

A. Yes, sir, I have studied the question more or less. Been in my mind a great deal.

Q. 108. State whether or not you have examined trees and forests generally within a short time after you have seen the smoke in there?

A. Yes, sir, I have. I have seen the effects on the leaves Up on the mountain near my house, there was some white pines sixteen or eighteen inches in diameter. A tree there had been affected two times before and then put out again in the spring. I saw the smoke come in on that tree, it covered the whole country, and in a day or two after the leaves begun to turn brown at the points and in — week they were dropping off. The tree never did put out any more, it was killed by the fumes.

Cross-examination.

By COUNSEL FOR DEFENDANTS:

Q. 1. You say you own one hundred and eight thousand acres of land in North Georgia?

A. The Shippen Brothers Lumber Company does.

Q. 2. That is a corporation?

A. Yes, sir.

Q. 3. You are one of the stockholders?

A. Yes, sir.

Q. 4. You are the President?

A. Yes, sir.

Q. 5. You have active management of the company?

A. I have.

Q. 6. How much of that do *own* the title in fee?

A. I couldn't tell you exactly, but something like fifty eight to sixty five thousand acres.

Q. 7. About sixty thousand acres?

A. Fifty eight to sixty five thousand.

Q. 8. And on the remainder you own just the timber interests.

A. Have timber deeds, they are on record.

417 Q. 9. That gives you the privilege of so many years to cut off the timber?

A. I don't think any years *or* stated, there is no specific time.

Q. 10. You purchased that within the last eighteen years?

A. Within the last nineteen years.

Q. 11. Up to what length of time have you been purchasing it?

A. Our last purchases occurred prior to ten years ago. We did purchase, maybe a little in the last ten years, practically none except where we were going to cut it. We have not purchased any for holdings, as soon as the smoke came in our territory or district, we stopped our purchases.

Q. 12. I believe you have been present all the time the testimony was being taken in this case?

A. Most of the time.

Q. 13. You have looked up the witnesses in the case?

A. Why, I suppose I have, I am vitally interested in the case, yes sir, I have.

Q. 14. You have been in conference with the attorneys for the State of Georgia all the time?

A. I have been advising them to the best of my ability.

Q. 15. Sitting by them and prompting them continuously?

A. Yes, sir.

Q. 16. Of course, you paid your own expenses during all these times of taking testimony?

A. I think every one else has.

Q. 17. I asked you if you were paying your own expenses?

A. I am.

Q. 18. You were present at Chattanooga?

A. I was.

Q. 19. And at Knoxville?

A. Yes, sir.

Q. 20. You have been in Blue Ridge during the entire time?

A. Yes, sir.

Q. 21. As a matter of fact you have consulted with the attorney general for Georgia before the action was ever brought didn't you?

A. I don't recall as to that—do you mean the original action?

Q. 22. Of course, there has not been but one action by the State of Georgia, the one heard in 1906?

A. You mean Mr. Hart?

Q. 23. Yes, sir.

A. Yes, sir.

Q. 24. As a matter of fact you instituted the case, didn't you?

A. I don't know that I would say that.

418 Q. 25. You aided in it?

A. I think quite a bunch of us, I don't think I was the only one.

Q. 26. As a matter of fact, you were the moving spirit that has this suit brought against this company?

A. I know I had considerable to do with it.

Q. 27. You have been at it continuously from that day to this?

A. I have been trying to get these fumes stopped to save this country.

Q. 28. In fact your corporation has filed a bill against the Ducktown Copper Company in the United States Court for the Southern Division of the Eastern District of Tennessee?

A. Yes, sir, we filed a bill of injunction asking for relief after we had waited for five or six years for you people to relieve the situation by making sulphuric acid plants, which they were supposed to put in to take out the acid. I have always believed from the start,——

Q. 29. I am not asking for your beliefs, answer my questions and we will get along?

A. I would like to explain my position. You are trying to show up one position and I want to show you the other, I want to show you the things that appear that put me in the position to take the interest in the matter I am now taking.

Q. 30. You have stated the conditions existing in North Georgia with reference to timber?

A. You go on about a suit, I want to say I have never had any desire, never wanted to put them out of business, all I want is for them to take care of their fumes and keep them away from us. I don't want damage, I want the fumes stopped, I want our timber kept from being hurt.

Q. 31. You filed a bill in the Federal Court?

A. We have.

Q. 32. When?

A. The records will show.

Q. 33. About when?

A. I don't know, the records will show.

Q. 34. Four years ago?

A. If I remember correctly it was five or six years ago. We have up the suit in hopes that you people would relieve the situation.

419 Q. 35. The evidence has been taken in that case?

A. It has. It has been submitted to Judge Sanford. He told us that he would not pass on the case until the Supreme Court had passed on the Georgia case.

Q. 36. So that case has been heard before Judge Sanford?

A. Yes sir.

Q. 37. You gave your testimony in that case?

A. I did.

Q. 38. Now, Mr. Shippen, I believe you compromised the matter

against the Tennessee Copper Company did you not? Your company?

A. I think my corporation compromised or gave an easement over my protest.

Q. 39. I say your corporation compromised its claim against the Tennessee Copper Company?

A. I think they did.

By COUNSEL FOR PLAINTIFF: We except to the question as being entirely irrelevant and incompetent.

Overruled.

Appeal prayed and granted.

Q. 40. When was that done?

A. I don't remember, it was after the State of Georgia suit was decided, after the injunction was granted.

Q. 41. Four years ago?

A. I think a greater time than that.

Q. 42. Five or six years ago?

A. I don't remember.

Q. 43. How much did they pay your company?

A. I don't know as that——

Q. 44. I have asked for it.

A. Do I have to answer that question?

By COUNSEL FOR PLAINTIFF: Yes sir.

A. They paid us fifty thousand dollars.

By COUNSEL FOR PLAINTIFF: We except to the question and answer covering any settlement or litigation with or against the Tennessee Copper Company as incompetent and irrelevant and immaterial.

Overruled.

Appeal prayed and granted.

Q. 45. Was the settlement in writing?

A. I suppose it was.

Q. 46. Have you a copy of that writing?

A. I have not.

Q. 47. What was the nature of that settlement?

A. I couldn't tell you that.

Q. 48. Did you release them from all liability?

A. I couldn't tell you that.

420 Q. 49. Did your company agree that you would not prosecute any injunction suit against them for emitting smoke and killing timber on your lands?

A. I don't know that we did. I couldn't tell you that.

Q. 50. You were the President of the company?

A. I am.

Q. 51. You were president at that time?

A. I was.

Q. 52. You say that you personally did not agree to the compromise?

A. I stated my position before our directors and stockholders and was not present when it was done. They seemed to have different views from those I had. I left the meeting and let them go on with the matter, and I understand they accepted the proposition.

Q. 53. You know it was accepted?

A. It was.

Q. 54. You know that your company got fifty thousand dollars?

A. They did.

Q. 55. You were then President of the company, were you not?

A. Yes sir.

Q. 56. You were in active management of the company?

A. Yes sir.

Q. 57. Still you don't know what was the content of the settlement or compromise that was made?

A. I don't know that I do, that has been possible seven or eight years ago, I don't remember.

Q. 58. You know whether or not your company released the Tennessee Copper Company from all liability for damages prior to that time?

A. I stated so, you don't think they would pay us fifty thousand dollars for nothing.

Q. 59. You know whether or not your company released them from subsequent lability?

A. I don't know.

Q. 60. You don't know whether your company has a right to file a bill against them?

A. I do not.

Q. 61. Any way, your company has never filed a bill of injunction against them?

A. No. If our company had to proceed against the Tennessee Copper Company, I think we would receipt our bill and hand it to them. I think they are immune against the Federal Court, and I don't think we could do anything where all the people are on their side.

421 By COUNSEL FOR PLAINTIFF: We except to all the questions and answers in regard to any alleged settlement made by the Tennessee Copper Company for the reason it is immaterial and irrelevant to the issues in this case, and second because it has been testified that the settlement was in writing, and that is the best evidence.

Overruled.

Appeal prayed and granted.

Q. 62. The Tennessee furnaces are very much larger furnaces *are very much larger furnaces* than the Ducktown Company's furnaces, are they not?

A. I don't know that, I never was in the other plant. I never have examined the two plants with that in view. I never have been in both plants.

Q. 63. But you know it is the larger plant, don't you?

A. It has got the largest stack.

Q. 64. You know they operate the larger mines and the mines have the greater capacity?

A. I don't know about that.

Q. 65. You know it has more furnaces?

A. I have never investigated anything at both of the plants, I can't see much difference in volume of smoke.

Q. 66. Do you mean to swear you do not know that the Tennessee Copper Company's plant has a greater capacity than the Ducktown Copper Company's plant?

A. I am swearing from only what I saw.

Q. 67. But do you say that you do not know that the Tennessee Copper Company has not a larger capacity then the other?

A. I don't know anything about the capacity of either of the plants, I don't know what is the capacity.

Q. 68. You have been through them?

A. I have been through the Tennessee Copper Company's plant partly, but what could a man tell as to the amount of stuff being smelted in one plant or the other?

Q. 69. You are not a botanist?

A. No sir.

Q. 70. You are a layman so far as that is concerned?

A. Most assuredly.

Q. 71. You are swearing about the fumes injuring the forests?

422 A. Yes sir, I know they do injure the forests.

Q. 72. So there are some things a layman can swear to and others he cannot?

A. If I knew about those things, I could tell you.

Q. 73. Anyway, the Tennessee Copper Company is much nearer the Georgia line, you know that?

A. At some points it is.

Q. 74. I am talking about the Tennessee Copper Company's plants?

A. I am too.

Q. 75. Do you mean that the Ducktown Copper Company's plant, any part of it is as near as any part of the Tennessee plant?

A. If you are talking only about the Georgia line, you are right, but I can show you in Georgia where the Ducktown Company is as near to it, if we were up there.

Q. 76. I will not take the time to go over that matter with you?

A. There is Georgia territory which the Ducktown Copper Company's plant is nearer to than the Tennessee Copper Company.

Q. 77. Then your testimony is to the effect that the Ducktown Copper Company is as near to all the lands lying in Fannin County, as the Tennessee Copper Company's plant?

A. Some of the land in Fannin County, the Ducktown plant is nearer to than the Tennessee Copper Company.

Q. 78. But take the major part, the large body of Fannin County?

A. I think the Tennessee Copper Company is two miles nearer the larger body.

Q. 79. And it has the high stack.
A. It has.
Q. 80. *And yet you are not prosecuting any suit against them,* but you have one against the Ducktown Copper Company?
A. You cannot get jurisdiction on the Tennessee Copper Company in the United States.
Q. 81. Is that the reason you have not filed a bill against them?
A. That is one reason. There is no use to sue them in the Courts of Tennessee under any consideration.
Q. 82. That is because you say the Courts in Tennessee will not give anybody justice?
A. Taking the past history, that is one reason that operated in making a deal with the Tennessee Copper Company that was made. Your company can be sued in the Federal Court and we felt
423 we could get justice.

By COUNSEL FOR PLAINTIFF: We except to all the questions and answers relating to any settlement for the reason it is not relevant to any issues in this case.
Overruled. Appeal prayed and granted.

Q. 83. In addition to that you tried to compromise with the Ducktown Copper Company, didn't you?
A. I think some negotiations were made along that line with Judge Parks and Mr. Freeland?
Q. 84. Don't you know there was?
A. Yes sir, I know it.

By COUNSEL FOR PLAINTIFF: We except to that for the same reason as above.
Overruled. Appeal prayed and granted.

Q. 85. You tried to get twenty five thousand dollars?
A. No sir.

By COUNSEL FOR PLAINTIFF: We except for the same reason as above.
Overruled. Appeal prayed and granted.

Q. 86. As a matter of fact didn't you offer to take eight thousand dollars?
A. No sir.
Q. 87. They refused to give you anything?
A. Never, on your life.
Q. 88. Now, Mr. Shippen, you have been here eighteen years?
A. I came down here pretty nearly twenty years ago.
Q. 89. You bought those lands eighteen and nineteen years ago?
A. About nineteen years ago, I moved here about eighteen years ago.
Q. 90. You remember when that high stack went up in 1906?
A. I remember about that time.
Q. 91. About the time the case was heard in the Supreme Court?
A. Yes sir, I think the same year.
Q. 92. That didn't increase the bad effects of these fumes, did it?

424 A. I think it did. As I remember the effects were greater everywhere. I think it increased, but I think the increased smelting in the basin was responsible for it. I wouldn't all together attribute it to the Tennessee Copper Company, attribute it to what you people were doing by putting out an increased amount of fumes and poising the air, which made the gases that much more deadlier.

Q. 93. You are a layman?

A. Yes sir.

Q. 94. If you are a layman, why are you trying to swear what was the cause of the increase of those fumes?

A. The increase I know, absolutely what caused it. If you smelt copper you cannot incinderate copper without liberating those fumes.

Q. 95. If you are a layman why are you swearing positively it was the Ducktown Company that this increased damage was attributable to?

A. I didn't swear that positively,—These people were building additional furnaces to put the ore in.

Q. 96. You know now that the Ducktown Company increased its output about that time?

A. No, I am not talking about the Ducktown Company, I am talking about the Tennessee Copper Company.

Q. 97. You were swearing about the Ducktown Copper Company?

A. No.

Q. 98. Well, the- did or did not the Ducktown Company increase its capacity about 1906?

A. I couldn't tell you as to that.

Q. 99. You know the Tennessee Company did?

A. I know they did, built additional furnaces and built a big stack.

Q. 100. You know immediately after that conditions became worse?

A. From that time conditions have been worse, yes sir.

Q. 101. Then it must have been the Tennessee Copper Company that caused those bad conditions, wasn't it?

A. The Tennessee Company and possibly the other company, I don't know what they did.

Q. 102. The Tennessee Company increased its capacity and built its high stack about that time, and you don't know that the Ducktown Company did increase its capacity, then you would naturally conclude it was the Tennessee Company that did the damage?

A. It helped and contributed to the cause.

425 Q. 103. If the other people did not increase their capacity or high stack, how did they contribute to it?

A. They were doing damage all along, when they put their ores,—they were the first ones to begin roasting the ore green. They were doing damage in our territory before the Tennessee Copper Company.

Q. 104. When was that?

A. Prior to the time of the building of the high stack.

Q. 105. I am talking about when the high stack was built and they increased their capacity. If the Ducktown Company didn't increase its capacity, and didn't increase the height of their stack, how could they have contributed to the increase in damage?

A. Because the fumes from both furnaces united in whatever territory the winds take them.

Q. 106. Don't you know the damage couldn't possible be as bad as it was after,——

A. I don't know about that, they have been doing damage all right. Both doing it according to the amount of stuff they are smelting.

Q. 107. Now, Mr. Shippen, the damage increased in 1906, 1907 and 1908, and was pretty bad all through this North Georgia section?

A. Yes sir, it was.

Q. 108. But it has never been,—Has it never been any better since that time?

A. Why, in some sections of the country it has been better and in some sections it has been worse. If you could follow those fumes during the entire time you could see how that was. It does not damage Blue Ridge one year and the next year maybe it will, you don't know where it is going, and for that reason you cannot absolutely state just the conditions with respect to what it is to-day and what it was last year or the year before.

Q. 109. You have been at Copperhill and Isabella?

A. Yes sir, repeatedly.

Q. 110. You have been there and seen them construct those acid plants?

A. Yes sir.

Q. 111. You know they are extracting a large amount of
426 acid from those fumes?

A. I presume so. The acid plants of the Tennessee Company has the appearance of being much larger than the Ducktown Company, has a great many more chambers, and larger plant.

Q. 112. You know they extract more acid than the Ducktown Company?

A. I have seen the reports of the railroad,——

Q. 113. I am not asking you about any reports from the railroad, now, I say,——

A. I have seen ten or twelve or fourteen cars go out from the Tennessee plant.

Q. 114. So it is you know they had an acid plant of greater capacity than the Ducktown Company?

A. I really,—As a matter of fact I don't know whether they both use the same process.

Q. 115. But you know the Tennessee Company has a plant of greater capacity?

A. Yes sir. I guess they both use the chamber process. One of the first plants your company, made an experimental plant, run along for a long time without making any acid at all. You asked me about the acid plants, that plant of yours was a failure, that

process was a failure and you took it out. The Tennessee Company built a chamber process plant and was successful, but your plant is not anything like as large as the Tennessee plant.

Q. 116. If you can swear so positively that the Tennessee Company has not an acid plant that has a greater capacity than the acid plant of the Ducktown Company, why was it you couldn't swear that the Tennessee Company had a larger plant, larger smelting capacity that then Ducktown Company?

A. Are you speaking of the furnaces?

Q. 117. Yes sir.

A. Well, because I don't know much about your furnaces, or the capacity of them. I never have been at the Ducktown Company's plant, but I have seen the fumes escaping from there. I don't know whether that is on account of the Tennessee Copper Company's acid plant or whether it is on account of your people smelting more ore.

Q. 118. Did I ask you about that?

A. I suppose that would be the answer to your question, you asked me about the size of the plants, and you asked me why it was
427 that I could tell you one thing one time and not something else at another, and I am telling you why. They are smelting more ore at your plant, or wasting more gas at your plant.

Q. 119. Still you are going to stick to it, that you don't know whether the Tennessee Copper Company has a greater ore smelting capacity than the Ducktown Company or not?

A. I am going to stick to it that I don't know whether they smelt more ore or not.

Q. 120. You have been through the furnaces and have looked at both of them?

A. No sir, I have never been in your furnaces.

Q. 121. Didn't you ever look through either one of them?

A. Of the Ducktown Company?

Q. 122. Yes sir.

A. No sir.

Q. 123. If you went around there you could see them?

A. I was along the road by your plant.

Q. 124. Wasn't you about the furnaces?

A. I was within one hundred yards of your furnaces.

Q. 125. And when you got within one hundred yards of there you begun to strangle?

A. We went through that blue stuff there.

Q. 126. Will you tell me when it was and how it was that it strangled you?

A. It affected my throat badly.

Q. 127. But the fumes from the other plant never did affect your throat?

A. Not as strong as at Ducktown.

Q. 128. So it is that the Tennessee plant is wholly innoxious?

A. They may have better equipment at the plant.

Q. 129. They paid you fifty thousand dollars for nothing?

A. No sir, for damages they had done.

COUNSEL FOR PLAINTIFF: We except to that as immaterial and ant.

rruled. Appeal prayed and granted.

Q. 130. Going back to where we started, you know those two concerns do extract a great amount of acid from those fumes?

I know I have seen acid coming from there.

131. You swore a while ago you saw how many carloads?

I have seen tank cars coming from there loaded with acid.

132. What quantity of tank cars leave there?

As much as ten or fifteen carloads, almost train loads.

133. Formerly that was all going out and being diffused in the ohere, wasn't it?

If they are smelting the same amount of stuff it was.

134. And hence is it not, of necessity, the acid plants take out nuch poison, or in other words, the atmosphere was just that more poisonous?

Most assuredly, if conditions were just the same. If they are ng just the same they did then.

135. Are you going to swear that taken as a whole the condi- in North Georgia are just as bad since that acid is being ex- l as before?

Well, I have always sworn, I have sworn, that conditions at y, in Gilmer County, Georgia, where I now live, for smoke, has with us more, oftener, and in great quantities this year than oefore in my life.

136. Then you swear that taking the acid out of that smoke, way from the atmosphere, is making conditions worse?

No, sir, I am not. I do not know as to what those people are ng up there, we have not been able to get it, as to what they nelting. We don't know what they are doing, all I know is is being done down here.

137. What people are you talking about?

Your people, the Ducktown Copper Company.

138. Don't you know there has been filed in this case a record erything that is being done by the Ducktown Copper Com- ?

I never heard of it.

139. Do you think you know everything that has been done in this case?

A. No sir, you summoned witnesses from your own plant when I was not present, you examined two witnesses.

140. Anyway, you testify that conditions are getting worse?

I don't know that they are getting any worse, but conditions orse with us now than ever before so far as smoke is concerned.

141. You mean to testify that conditions are worse now than the acid plants were put up?

In certain sections, yes sir, at Ellijay there is more smoke than oefore.

142. Mr. Shippen, I am talking North Georgia as a whole, are

the average conditions there in Fannin and Gilmer Counties worse now than they were before the acid plants went in?

A. As explained to you a moment ago, it is hard to get anything definite or give a definite answer, because of the difficulty of getting definite information. In some places it injures worse one year and then in other places it worse another year. In certain parts of our County, but have seen it this year, certain parts affected a year or two ago are not affected so badly now. I have seen timber in Blue Ridge browned, but I don't see it now. I see little effects of it now as compared with what I have seen it here.

Q. 143. Give us your judgment as to it affecting sections, taking it generally, on an average, is it worse now than before the acid plants went in?

A. I don't see much difference, I don't see so very much difference in the situation, if anything I think it is worse, because the injury has been applied longer, and I believe the longer the conditions prevail the worse we will see this country affected, because if you injure a tree it don't show up right that moment, some times it will take several months to show up.

Q. 144. Did you ever study the diseases of trees?

A. Only nominally, I am not an expert along that line.

Q. 145. There are diseases in trees?

A. Yes sir, a number of them.

Q. 146. Trees will die regardless of smoke in the forests?

A. Yes sir.

430 Q. 147. Are there any diseased trees in North Georgia?

A. Yes sir.

Q. 148. Do they die any way, from other causes than smoke?

A. Yes sir, they die from lightning, fire, from fungi and insects.

Q. 149. What kind of trees are especially subject to disease, and fungi.

A. The white pine and chestnut. I think the chestnut has more *any* enemies than almost any of the forest trees. Whole forests have been striped out by disease in the trees. I went to Valley Forge where the chestnut forests had the blight disease, that whole forest was diseased. The Government has been fighting the disease to stop it, but we have not got that disease here.

Q. 150. Is not the hickory also subject to diseases?

A. Not so much as the white pine. The disease in hickory is mostly from beetles and insects.

Q. 151. Of course, you have gone over the records in all these cases?

A. Gone over the records?

Q. 152. You have gone through the records in your own case, and know everything that has been testified in that case?

A. I don't know everything, I am more or less familiar with it.

Q. 153. You have had access to the records in the various smoke suits?

A. Yes, sir, part of them.

Q. 154. Hemlock is especially subject to certain diseases?

A. Yes sir, mostly insects and beetles.

Q. 155. Even oaks you see them dead in all forests?
A. Yes sir, oaks have beetles and worms the same as chestnuts.
Q. 156. Have the lands in this North Georgia section increased in value during the last eighteen years?
A. Naturally they will in every section of the country. They have increased, of course, couldn't do otherwise.
Q. 157. How much did you pay for your land eighteen and nineteen years ago?
A. I don't remember what the purchase price was, we paid——
Q. 158. Fifty cents an acre?
A. We have paid as much as one thousand dollars for one
431 hundred and sixty acres, from that down to a dollar an acre.
Q. 159. And sometimes as low as fifty cents an acre?
A. No.
Q. 160. What are your lands worth now?
A. That is a pretty hard thing to tell.
Q. 161. About what?
A. I wouldn't know, it would be a matter of opinion, according to the land and where it was located. It would be worth considerably more now than then, some would be worth considerably more and some wouldn't be worth very much.
Q. 162. Have not land increased fifteen and twenty times in value since eighteen years ago?
A. They may have done that, I have not kept up with the land values.
Q. 163. Have they not done it?
A. I guess some lands have increased more than that.
Q. 164. In testifying in your case, state whether or not these questions were asked you and you answered them?
"Q. Have these lands or not increased in value since you bought them seventeen years ago?
"A. Certainly they have.
"Q. About what proportion?
"A. About seventeen years ago, in some places, land could be had for as low as a dollar an acre. They are worth fifteen or twenty times that much today."
Is that so or not?
A. Certain land, yes sir. Down in Alaculsa Valley that has been done, some parties bought land at a dollar an acre and borrowed fifteen dollars an acre from a trust company in Chicago, and is recorded in the courthouse.
Q. 165. On an average, in North Georgia, in Fannin County, in the smoke zone how much has it increased?
A. In the smoke zone it has gone down like forty, you can buy lands now less than you could a few years ago. These lands I am speaking of lay in the Conasauga Valley. You see little injury there.
Q. 166. Is Fannin County in the smoke zone?
A. Most assuredly, but this land is not in Fannin County,
432 it is about the Fannin County line, Fannin and Union County.

Q. 167. Is Gilmer County in the smoke zone?

A. Yes sir, part of it is.

Q. 168. How much has land increased in value within the last fifteen years?

A. You are asking me something it is absolutely impossible to answer. Certain lands, if you will give me any certain lands you want, I can give you an opinion on it. I am not going to take the whole universe, I cannot cover that.

Q. 169. I don't want you to take the whole universe, let's take your holdings of 108 thousand acres, how much have they increased in value within the last eighteen years?

A. About as I testified in that case, about fifteen or twenty times.

Q. 170. Well, have they done that?

A. Take them as a whole, I wouldn't be surprised if they had.

Q. 171. How many feet of lumber have you cut off of them?

A. We have not cut off those lands in question, have not cut ten per cent.

Q. 172. I am not asking that, but how many feet of lumber have you cut off of them during that time?

A. We cut,—off of that land?

Q. 173. Your lands, the lands you say have increased fifteen or twenty times.

A. The lands spoken of, wee have not cut off, those that have increased in value so much.

Q. 174. I am asking you about your one hundred and eight thousand acres of land, you say it has increased in value fifteen or twenty times?

A. Yes sir.

Q. 175. How much lumber have you cut from those lands?

A. Cut very little.

Q. 176. How many thousand feet?

A. I couldn't tell you that.

Q. 177. How many million feet?

A. We have operated our plant almost exclusively and entirely from timber which we purchased outside, trying to hold our own timber.

Q. 178. I am not objecting to your saying that? But how much did you cut from your own lands?

433 A. I guess we have cut five or six million feet. I don't know whether that is correct or not. We have cut very little timber. We have six hundred and fifty million feet of timber on our own lands.

Q. 179. So it is you have taken off five or six million feet and still the land has increased fifteen or twenty times?

A. Yes sir, where it is killed we cut it off, where it has fallen down and things like that.

Q. 180. The Government has condemned some of your lands?

A. It has.

Q. 181. I believe you testified in that case about the value?

A. Yes sir.

Q. 182. You testified in that case, didn't you, that it was worth thirty dollars per acre, with the birds singing in the trees?

A. I don't remember about that. I would like to see that if you have a copy of the record.

Q. 183. You did testify it was worth thirty dollars an acre?

A. I don't remember about that.

Q. 184. Don't you remember what you testified in that case about the value of those lands?

A. I do not.

Q. 185. When did you give your testimony in that case?

A. It has been several years ago, I don't remember just when.

Q. 186. It has been three years ago?

A. I don't remember that.

Q. 187. It has not been over that?

A. I hardly think so.

Q. 188. Really, don't you remember what value you put on those lands?

A. I don't. That land was almost out of the smoke zone, and no timber had been cut off of it, never a stick had been cut.

Q. 189. Now you testified about some rye that was growing down there in Ellijay?

A. Yes sir.

Q. 190. You never studied the cultivation of rye, did you?

A. No sir.

Q. 191. Nor the diseases of rye?

A. No sir, but I know smoke disease on rye when I see it. I saw it come there and effect it.

Q. 192. You don't claim that rye was killed down, it was fine looking rye?

A. It had plenty of straw, plenty of head, but it didn't have anything in the head.

434 Q. 193. Don't you know it is a fact that for a short time back there has been a fungus disease in rye which prevents the head from filling out?

A. I never heard of it.

Q. 194. You don't know that your description covers that disease exactly?

A. That covers the situation all through North Georgia, and in my territory.

Q. 195. You don't know whether the rye is in the same fix elsewhere?

A. I don't know about that, I am only speaking right here, what I saw.

Q. 196. You don't know that it was smoke did that, do you?

A. Most assuredly I do.

Q. 197. You know it?

A. Yes sir, I saw it settle on it.

Q. 198. When did it settle there?

A. Along in the early part of the season when the rye was in bloom.

Q. 199. The smoke settled in the early part of the season, but the rye grew on?

A. It grew on, yes sir.

Q. 200. It never wilted?

A. Well, I don't know that I would say that.

Q. 201. This rye made a fine head?

A. The size of the head, yes sir, but there was nothing in it.

Q. 202. You know with absolute certainty that smoke did that?

A. I believe so. If I was as certain *as* of my future salvation as I am of that, I wouldn't give religion much concern.

Q. 203. So you are really more certain about that than you are of your own salvation?

A. I certainly am.

Redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. Mr. Shippen, you have been a citizen of North Georgia for some years?

A. Yes sir, eighteen years.

Q. 2. Have you conferred with and talked with other citizens of North Georgia about conditions?

435 A. Yes sir, a great many of them, and with Governor Carroll, Governor Smith and Governor Slaton.

Q. 3. You are interested in this case?

A. I certainly am.

Q. 4. Vitally?

A. Yes sir, because I feel our life's work and investment, our whole life's work depends on this case.

Q. 5. You are interested as a land owner and citizen of Georgia?

A. I certainly am.

Q. 6. Do you know J. A. Drake?

A. Yes sir.

Q. 7. State whether or not he has been in North Georgia talking to witnesses and preparing the case?

A. He certainly has, he has handled this case absolutely. While I have made some little suggestions, he has run this case and is running it now. I am not in control of it.

Q. 8. He has run it independent of you?

A. Absolutely, because he has not put all the men we brought on the stand who would testify as to damage around them, where it has been done.

Q. 9. Now, Mr. Shippen, there is an arbitration agreement between the State of Georgia and the Tennessee Copper Company?

A. Yes sir.

Q. 10. That contains a provision or an agreement for the controlling of the smoke fumes through the growing season?

A. Yes sir. I talked with Governor Slaton and the members of the Legislature who had that matter under advisement at the time it was put through, and I know the same consideration, the same that influenced the State of Georgia to execute that agreement was the

specific provision that they were to control their fumes from April 10th until October 1st, that they would agree to put no fumes over on us, that was the main consideration.

Q. 11. State whether or not the Ducktown Company has entered into any such agreement?

A. There was the same sort of proposition made to the Ducktown Company and they positively refused to care for their fumes and treated us with contempt and refused to even treat with the State of Georgia.

Q. 12. What has been her attitude towards the State?

A. One of contempt, as if the State had no rights at all, that they would run, and the State of Georgia had to take it.

436 Q. 13. Now, you were asked about the value of lands, your lands, one hundred and eight thousand acres of timber land, is timber and lumber higher now than eighteen years ago?

A. We bought first and second class poplar eighteen years ago, which we have since sold that same poplar for one hundred and twenty five dollars.

Q. 14. Is the increase in value due to the timber upon the land?

A. Yes sir, to a great extent.

Q. 15. Would it have increased if the timber had been killed on your land, the remaining timber have increased to such extent, even if the timber had been killed?

A. Yes sir, beyond that.

Q. 16. With regard to that tall stack down there, the Tennessee Copper Company's state whether or not the smoke zone was extended or doubled by the erection of that stack?

A. I think that high stack does throw the fumes further into Georgia. They claim up there that it would remedy,——

By Counsel for Defendant: Just answer the question, don't give any of your beliefs.

Q. 17. It carries it further than before the high stack was erected?

A. Yes sir.

Q. 18. That is the effect the tall stack has?

A. Yes sir, it spreads it over a larger territory, sent it down on us.

Q. 19. Have you seen or heard of any records being filed by the Ducktown Company except what Mr. Lamoreaux filed?

A. I didn't hear him testify.

Q. 20. You didn't hear him state that they didn't bring any books to file here, and we would have to come and look at them.

A. I think I went away before his testimony was completed, I heard something of that kind.

Recross-examination.

By Counsel for Defendant:

Q. 1. You were asked about the Ducktown Company treat-
437 ing Georgia with contempt, do you know anything about that?

A. I do.

Q. 2. Have you not seen the correspondence between the attorney general and Mr. Miller?

A. I have been present at one or two conferences where we had Mr. Miller with us, and have seen your associate counsel and we got absolutely no satisfaction out of them. What they would do or wouldn't. They said they were doing no damage.

Q. 3. Don't you know that the Ducktown Company offered to let the State of Georgia select a commission of scientist- of ability, men who had no interest in the matter, wholly fair, and let them come on the ground and make an examination and abide by their verdict?

A. I never heard of any such thing.

Q. 4. And didn't they agree that they would pay the expense of any such Board of Commissioners?

A. I never heard of any such thing as that, if that proposition was made, I never heard of it.

This witness traveled in coming to Blue Ridge and returning home, 34 miles.

(Thereupon the further taking of testimony in this case is adjourned until August 20th, 1914.)

(Met pursuant to adjournment on August 20th at 1 o'clock P. M.)

The next witness, J. G. DEWEES, having first been duly sworn, testified as follows:

Direct examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. How old are you?
A. Fifty years old.
Q. 2. Where do you live?
A. Gilmer County, Georgia.
438 Q. 3. Whereabouts in Gilmer County?
A. I live four miles northeast of Ellijay.
Q. 4. What is your settlement known as?
A. Northcutt.

(It is agreed that the witness lives seventeen and one hald miles from Copperhill and twenty and one fourth miles from Isabella.)

Q. 5. How long have you been living there?
A. Four years.
Q. 6. How long have you lived in Gilmer County?
A. About fifteen years.
Q. 7. Do you occupy any position in Gilmer County with the Farmer's Union?
A. Yes sir.
Q. 8. What is that?
A. President of the Union for the County.
Q. 9. What is your business there?
A. Teaching and farming.

Q. 10. School teacher?
A. Yes sir.
Q. 11. How long have you been a school teacher?
A. In that county?
Q. 12. Or elsewhere?
A. I have taught twenty four years.
Q. 13. How long have you taught in Georgia?
A. About fifteen years.
Q. 14. How long have you been farming?
A. Ever since I was large enough to farm.
Q. 15. State whether or not the Farmers' Union is a National organization?
A. Yes sir, it is.
Q. 16. How long has it been in existence, if you know?
A. I couldn't tell you right now.
Q. 17. Approximately how long, has it been as long as ten or twelve years?
A. Yes sir.
Q. 18. Now, have you ever had occasion to examine the timber and forests of your section of the country?
A. Yes sir, I have investigated it very closely.

Q. 19. Have you ever been to the plant of the Ducktown
439 Copper Company and the Tennessee Copper Company?
A. No sir I have not.

Q. 20. State whether or not you have ever seen any smoke in your section of the county?
A. Yes sir.
Q. 21. Can you see it and smell it?
A. Yes sir.
Q. 22. What does it look like?
A. Well, it has the appearance of blue smoke?
Q. 23. What does it smell like?
A. Sulphur.
Q. 24. Have you ever seen that smoke coming through the forests or into the forests and timber?
A. Yes sir.
Q. 25. Have you ever examined the timber and forests immediately after it was there, or a short time after?
A. Yes sir, I have noticed it.
Q. 26. What would you find the condition of the timber and leaves to be?
A. Well, when the smoke settles in there, for some time, and if we have moisture, we can see the effect of it on the leaves, slightly discolored, some worse than others.
Q. 27. Have you seen any smoke out on the garden pacthes this summer, on vegetables?
A. Yes sir.
Q. 28. What vegetables do you raise there?
A. Tomatoes, cabbage and beans and various vegetables.
Q. 29. Have you had occasion to examine them within a short time after you had seen the smoke?

A. Yes sir.

Q. 30. What would that condition be?

A. I found the tomatoes were hurt badly, seemed to be very serious.

Q. 31. What would be the appearance of the plants?

A. Something like a scald, and the young beans too.

Q. 32. Did you ever examine the forests back six or seven years ago, from that time up to the present?

A. Well, I have noticed the timber.

Q. 33. What is the condition of the timber and forests now, as compared to that time?

A. Not so good as it was then, where I have noticed it.

440 Cross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. Mr. Dewees, it is a fact that you never noticed any smoke in there at all until about eight years ago?

A. I couldn't say for sure just how long it has been.

Q. 2. It has been something like six or eight years?

A. About that.

Q. 3. Prior to that time you didn't notice any smoke in there at all?

A. No, sir.

Q. 4. Wasn't it just about that time that the Tennessee Copper Company's high stack was erected?

A. Just about the time the Tennessee Company constructed that high stack I noticed the smoke first.

Q. 5. Prior to that time you didn't notice it, the first was just after that time when you first begun to notice the smoke in there?

A. Yes, sir.

Q. 6. How is it this year in comparison with last year?

A. It is worse this year than last year.

Q. 7. How was it in 1913 in comparison with 1912?

A. I couldn't tell you, I don't remember.

Q. 8. Don't you remember how it was in 1912 in comparison with 1911?

A. No, sir, I don't remember that.

Q. 9. Now, Mr. Dewees, is it not so that for three or four years after you first began to notice it come in there, it was much worse than any other time?

A. Since that, yes, sir, until this year, that is my opinion, I wouldn't say for sure, but that is the way I observed it.

Q. 10. For three or four years after the Tennessee Copper Company's high stack was con*tr*sucted the smoke was worse than any other times since that, except this year?

A. Yes, sir, I think we had more smoke this year than for some years before this.

Q. 11. Do you know when the acid plants were put in?

A. I do not.

Q. 12. You don't know why it got better until this year?
441 A. No, sir, I never kept up with it, I don't know exactly.
Q. 13. I believe you say you are the President of the Farmers Union for your County?
A. Yes, sir.
Q. 14. Your Union, I believe is having a number of suits brought by various members, are they not?
A. Yes, sir.
Q. 15. Do you have charge of those suits?
A. I kind of have oversight of the business in our County, I have not got charge of them, if I understand your question, they are in the hands of lawyers.
Q. 16. Are those lawyers employed by your union?
A. Yes, sir.
Q. 17. Now, of course, this is a matter your local union has charge of?
A. Yes, sir, the county.
Q. 18. It is not national so far as that employment is concerned?
A. No, sir, not directly.
Q. 19. Now you say that smoke smells like sulphur, what do you mean by that?
A. It has a sulphurous smell, like sulphur burning.
Q. 20. Did you ever put any sulphur in the fire and smell the fumes coming up?
A. Yes, sir.
Q. 21. Do you mean it smells like that?
A. Yes, sir, but not so strong.
Q. 22. There is something in it that you can detect that reminds you of burning sulphur?
A. Yes, sir.
Q. 23. Of course, you don't know the ingredients of the smoke.
A. I do not.
Q. 24. It is kind of blue in appearance?
A. Yes, sir, and has a sulphurous smell, seems to be a little something else, not exactly like pure sulphur, but that is the odor it has.
Q. 25. Then there is another peculiarity of the odor other than that which comes from burning sulphur?
A. Yes, sir, that is the way it seems to me.
Q. 26. Did you ever notice the smell of the smoke emitted by locomotives when burning bituminous coal?
A. Yes, sir.
Q. 27. Can you detect any kind of sulphur smell in that?
442 A. I hadn't noticed that.
Q. 28. Didn't you notice along with the soot, the burning carbon that there is also a sulphur odor?
A. Perhaps there is but I hadn't noticed it, I had failed to notice that.

Redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. State whether or not the State organization of the Farmers Union has taken up this question on behalf of the local union and its members, some years ago?

A. There was a suit, or sort of movement first by the State officials.

Q. 2. Has the Farmers Union a Legislative Committee, and has that committee and president of the Union taken it up with the Governor and State authorities?

A. Yes, sir, we have had help from that source all along.

Q. 3. State whether or not a delegation from the County and State organizations have waited upon the legislature in regard to the movement?

A. Yes, sir.

(This witness traveled thirty two miles in coming to Blue Ridge and returning to his home.)

The next witness, B. F. WEEKS, having first been duly sworn, testified as follows:

Direct examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. How old are you?

A. Fifty two years old.

Q. 2. Where do you live?

A. I live in this county.

443 Q. 2. Whereabouts?

A. Down near Ducktown, two miles from Ducktown.

Q. 3. Just over the Georgia line?

A. Yes, sir.

Q. 4. How long have you been living there?

A. A year and a half.

Q. 5. How long have you lived in Fannin County?

A. Forty years, about.

Q. 6. Have you ever been to the Ducktown and Tennessee Copper companies plants?

A. Yes, sir.

Q. 7. Did you smell the smoke there?

A. Yes, sir.

Q. 8. Have you ever seen any smoke in your neighborhood where you live?

A. Yes, sir.

Q. 9. You can see and smell it?

A. Yes, sir.

Q. 10. State whether or not it is of the same appearance and odor as the smoke that comes from these two copper plants?

A. Yes, sir, it is.

Q. 11. Have you seen it there this year?

A. Yes, sir.
Q. 12. To what extent?
A. It has been there frequently.
Q. 13. Have you seen it there in the past year?
A. Yes, sir.
Q. 14. Have you ever seen that smoke settle in a clump of timber or garden patch at any time in the past few years?
A. I have.
Q. 15. Have you ever examined the timber or garden patch a short time after it settled on there?
A. I seen it a few months after it was there, and I have seen it a day or two.
Q. 16. What would be the condition of the plant and the leaves at that time?
A. Some of them would change their color and drop off and fall to the ground.
Q. 17. Can you remember any date on which you saw the smoke last year, 1913?
A. I couldn't be positive as to the exact date, somewhere about the 11th or 12th.
Q. 18. What month?
A. Of May.
Q. 19. How do you fix that date?
A. The way I remember, I had been to Chattanooga.
Q. 20. What for?
A. I went as a witness for Mr. Vestal, it was on Sunday after I came home.
444 Q. 21. Did you notice any damage from that visit of smoke?
A. Yes, sir.
Q. 22. To what?
A. Well, it wasn't a great deal of it, there was some.
Q. 23. To what was the damage done?
A. On the garden, the beans.
Q. 24. Has the smoke been frequently in your section?
A. Yes, sir.
Q. 25. For how many years?
A. I couldn't be exact about it, but for several years?
Q. 26. Could you fix any date, this year approximately when you saw the smoke.
A. I could not.
Q. 27. Have you ever been out with Mr. Guass?
A. I have been at his place.
Q. 28. About when was that?
A. I don't remember just what date it was.
Q. 29. About how long ago?
A. It has been about a month ago next Sunday.
Q. 30. That would throw it back in the latter part of July, the 24th or 25th?
A. Yes, sir, in July.

Q. 31. Did you have occasion to look at the plant of the Ducktown Sulphur Copper & Iron Company?

A. We was on his piazza and the smoke came from there strong, stronger than usual that day. We was talking about what it was doing and had done, and he said to me,—we went up on the mountain or hill above his place so we had a fair view of the Tennessee Copper Company's plant. We could see just where the smoke from it was going and we could see the smoke coming from the other plant. While we were not in sight of the other plant exactly, we couldn't see the plant but we could see the smoke coming from that direction, the smoke *in* up on the river and coming by his place, we could see the smoke there.

Q. 32. That was the smoke from the Ducktown Copper Company which you saw coming from where you were standing?

A. Yes, sir.

Q. 33. Have you had occasion to look at the timber and crops this year?

A. Not a great deal, I have been out just a little.

Q. 34. Did you notice the conditions when you were out?

A. I seen some sign of smoke.

Q. 35. What do you do and where do you live?

A. I have a little store there, and the post office.

445 Q. 36. You are the postmaster there?

A. Yes, sir.

Cross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. How long have you lived near Ducktown?

A. Well, I have been where I am at now, about a year and a half, I guess.

Q. 2. Where did you live before you moved there?

A. Six or seven miles further up the country, up the creek, have a farm up there.

Q. 3. Did you ever live right in Ducktown?

A. No, sir.

Q. 4. Did you ever work at either of the furnaces?

A. No, sir.

Q. 5. So you never have worked with either one of the companies?

A. No, sir, I never did.

Q. 6. You have been about Epworth a good deal, have you not?

A. Yes, sir.

Q. 7. You have been around there this year?

A. Yes, sir, I live there.

Q. 8. You are the postmaster at Epworth?

A. Yes, sir.

Q. 9. Don't you know the early part of the season was exceedingly dry?

A. Yes, sir, it was dry.

Q. 10. Didn't you have one of the worst droughts ever known in that country for that season of the year?

A. It has been very dry.
Q. 11. Didn't it hurt vegetation a great deal?
A. I suppose it did.
Q. 12. Didn't it dry up the potatoes and other garden truck?
A. I should think it had some effect on them.
Q. 13. Didn't that drought break up on the 4th of July?
A. No, sir.
Q. 14. On what date?
A. It was after that, I don't know just how long.
Q. 15. Then there wasn't any shower in Epworth on the 4th of July?
A. I don't think so, I don't remember it.
Q. 16. The drought lasted about six weeks?
A. I don't know how long, it was very dry.
Q. 17. A good deal of complaint in the country about the crops and gardens?
A. It was dry weather over there.
446 Q. 18. Now, do you remember, Mr. Weeks, when that Tennessee Copper Company's stack was built, that high stack?
A. I don't know just how long it has been built, I remember when it was going up.
Q. 19. You remember when it was done?
A. Yes, sir, it was done perhaps some five or six years ago, might have been longer.
Q. 20. Don't you remember that after that was put up there was considerable more damage done to timber over in North Georgia than there was before?
A. Well, it might have reached out a little further.
Q. 21. How far into North Georgia did you ever come to look at the timber?
A. At any time?
Q. 22. Yes, sir.
A. Well, I have been, since that high stack was put up I have been all over the county numbers of times.
Q. 23. Do you know when those acid plants were put up?
A. Yes, sir.
Q. 34. Well, between the construction of the high stack and when the acid plants were constructed, wasn't the smoke very much worse, didn't it do more damage?
A. I couldn't remember about that particular time. My recollection is there was not much change in the time between the erection of the two.
Q. 25. You really do not know when it was?
A. No, sir, I do not.
Q. 26. Now, you spoke about one particular date when you thought you noticed smoke, I believe you say it was along about the 12th of May, 1913?
A. That is my recollection, it was on Sunday.
Q. 27. And you had come from Chattanooga?
A. Yes, sir, just a day or two previous.
Q. 28. You had been down to Chattanooga?

A. Yes, sir.
Q. 29. You were attending court?
A. Yes, sir.
Q. 30. As a witness for Mr. Vestal?
A. Yes, sir.
Q. 31. On what day of the week did you get back?
A. I am not positive, I had been home a day or two only.
Q. 32. You said it did a little bit of damage to something, what was it?
A. Garden peas, English peas.
Q. 33. How big a patch of peas did you have?
447 A. The patch was not large, it wasn't my garden. My attention was called to it by the other party.
Q. 34. When was it you noticed the garden peas looked like they were a little but damaged?
A. On the next day.
Q. 25. Had you noticed them the day on which the smoke was there?
A. No, sir, the smoke was over there very strong—I know I remarked about it.
Q. 36. Don't tell that——
A. The smoke was there.
Q. 37. You didn't notice the smoke that day?
A. No, sir.
Q. 38. You didn't notice it the day before?
A. No, sir.
Q. 39. Or the day before that?
A. No, sir.
Q. 40. You never had given any attention to the peas until the morning after?
A. No, sir.
Q. 41. They seemed to be a little bit damaged, were they brown or not?
A. They were brown, considerably brown. I have been used to the damage, it had been done very recently just a short time, I am positive it was done the day before.
Q. 42. You think you can tell to the hour when it was done?
A. No, sir, not that close.
Q. 43. Can you tell to the day?
A. Yes, sir, I think so.
Q. 44. You are a smoke expert?
A. I am pretty well acquainted with it—no, sir.
Q. 45. What else was in the garden besides the garden peas?
A. I don't remember.
Q. 46. Were there any potatoes in it?
A. I don't know, I guess it was a common garden.
Q. 47. Was there any beans in it?
A. I don't remember.
Q. 48. Any tomatoes?
A. I don't remember what was in it.
Q. 49. Can you remember anything except the peas?

A. I remember my attention was called to it, the peas.

Q. 50. But everything else was in the garden that usually grows in gardens?

A. I suppose there was.

448 Q. 51. Don't you know there was?

A. I guess there was.

Q. 52. It wouldn't have been a garden if it hadn't been growing other stuff?

A. It could be.

Q. 53. Do you call a pea patch a garden?

A. It could be a garden and be entirely peas..

Q. 54. You mean if you plant a place ordinarily used for a garden, the garden is where you grow various kinds of vegetables?

A. Usually, sometimes there are quite a lot of things and sometimes not so many.

Q. 55. Any way, you saw some peas you say was damaged?

A. They were damaged.

Q. 56. Nothing else in the garden that attracted your attention?

A. Not that I remember of.

Q. 57. I believe you say these peas were brown?

A. Beginning to brown, or white color, I don't remember.

Q. 58. You said they were brown, now were they brown or white.

A. They were kind of brown.

Q. 59. You knew pea leaves turn brown from dry weather?

A. I don't know that they do.

Q. 60. You are a smoke expert, now don't you know that pea leaves turn white?

A. I couldn't tell you, I never told you I was a smoke expert.

Q. 61. You think you can tell when things are injured by smoke the day after?

A. I don't claim to be an expert.

Q. 62. Then why do you give such positive opinion?

A. I said being used to the smoke up there, seeing it frequently, I was sure the damage was done by smoke. I cannot tell just exactly when it was done.

Q. 63. That makes you a smoke expert?

A. I don't know.

Q. 64. Don't you know that the smoke from the furnaces turn all the pea leaves white, and not brown at all?

A. I don't know that.

Q. 65. Has not that been your experience?

A. I never saw any peas before, my attention was never called to any before that.

449 Q. 66. Then those were the only peas you ever saw that had been browned by smoke?

A. Peas of that kind are not extensively grown.

Q. 67. Then you don't know they were hurt at all?

A. I am positive they were.

Q. 68. I am not asking you that, they are the first peas you ever saw of that kind browned by smoke?

A. Yes, sir.

Q. 69. You have not seen any since of that kind?
A. I don't know that I have.
Q. 70. You never saw any before?
A. I don't know that I ever did before.
Q. 71. So you really don't know anything about it.
A. I have seen it on other peas we raise, common field crops, I saw it at home there.
Q. 72. Did you see it on garden peas?
A. Yes, sir, English peas.
Q. 73. So you know it is a fact that the smoke turns the garden peas white?
A. I know that was smoke signs.
Q. 74. But you don't know the smoke signs on garden peas?
A. Yes, sir, I say that was smoke signs on the gardens peas.
Q. 75. That is the only time you ever saw it on garden peas?
A. The only time my attention was ever called to it.
Q. 76. You are two miles from the Tennessee Copper Company's plant?
A. About that.
Q. 77. You have one of the best oak groves in North Georgia there at Epworth?
A. There is a nice grove there.
Q. 78. Nothing has hurt it?
A. I see some signs in it, not as much this year as before.
Q. 79. The trees are in perfect healthful condition?
A. I couldn't say that, I don't know whether they are or not, they are not, some of them.
Q. 80. Have you any corn crops around in that country?
A. Yes, sir.
Q. 81. Any meadows?
A. No, sir.
Q. 82. There are good crops right there by the furnaces in Ducktown?
A. I have not seen them.
Q. 83. That dry weather hurt the gardens?
A. I expect it did.
450 Q. 84. Now, Mr. Weeks, you know it is a fact that since those acid plants were put in there, the damage has not been anything like it was before?
A. How is that?
Q. 85. You know that since the acid plants have been established there has not been anything like the amount of damage to vegetation and timber as there was before?
A. I don't know just how it is down near the stacks of the companies at the time they were erected, but for several years after that I lived seven or eight miles further away. It was worse out on my farm after they were erected than ever before.
Q. 86. After what was erected?
A. The high stack.
Q. 87. You didn't understand me. I said the acid plant.

A. Well, no, it has not been as bad all together for the last two or three years as it was before.

Q. 88. Don't you know Mr. Weeks that after they have been extracting that acid from the sulphur fumes it has not been near as bad?

A. I couldn't say about that. I have seen quite a lot of damage this year, while I have not been out much.

Redirect examination.

By COUNSEL FOR DEFENDANT:

Q. 1. State whether or not it is true that there can be parts of the forests damaged and other portions not damaged?

A. Yes sir.

Q. 2. Did you notice damage there yourself?

A. Yes sir.

Q. 3. State whether or not that was smoke damage?

A. Yes sir, considerable signs.

Q. 4. When was that?

A. Two or three weeks ago.

Q. 5. This year?

A. Yes sir, this month.

Q. 6. Have you ever noticed any smoke damage on the gardens and crops prior to this year?

A. Yes sir.

Q. 7. State whether or not you attributed the damage this
451 year to the drought you have had?

A. No sir.

Q. 8. Did you ever noticed anything damaged besides those particular peas you saw there, that is not the only thing you have seen damaged?

A. No sir, that is not the only thing, I cannot say that I noticed whether or not anything else was damaged in the garden.

Q. 9. That is what he asked you, I was asking you if there was anything else?

A. Yes sir, sure, it killed my potato patch last year, I never got a potato at home, ten miles away, not a one.

Q. 10. Did it have any effect on your corn last year?

A. Well, I don't know, I wasn't out on the farm much last year.

Q. 11. You never lived there enough?

A. No sir.

Q. 12. You lived ten miles away?

A. Yes sir.

Recross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. Where was that potato patch injured last year?

A. Where I lived and up at the farm too.

Q. 2. You didn't get any potatoes anywhere?

A. I got just a few down home, just a few.

Q. 3. Where was your farm?
A. Seven or eight miles away.
Q. 4. Near what place?
A. Up next to the mountain, up about ten miles.
Q. 5. It is up near Mineral Bluff?
A. Up near Higdon's Store a mile and a half.
Q. 6. Right west of Chestnut Gap?
A. Yes sir.
Q. 7. What time in the year was that—when did you plant your potatoes?
A. They were planted in the early spring, about April.
Q. 8. Did you put in any claim for damages?
A. Yes sir.
Q. 9. How much did you put it in for?
A. I don't remember just exactly the amount.
Q. 10. What did you get?
A. Forty dollars is my recollection.
Q. 11. For damages to your potatoes?
452 A. And other crops, timber and such like.
Q. 12. So the Tennessee Copper Company paid you for that?
A. Yes sir.
Q. 13. Did Mr. Vestal get you to come here?
A. I got a subpœna to come here.
Q. 14. You have talked with Mr. Vestal about coming here?
A. We have talked about the smoke occasionally.
Q. 15. Didn't he talk to you about it especially before you came here?
A. No sir, he did not.
Q. 16. Didn't Mr. Vestal tell you he was going to have you as a witness?
A. I was willing to come on my own account?
Q. 17. Didn't he tell you that?
A. I don't remember that he talked about it, we have talked about the smoke, that is the chief conversation around where I live.
Q. 16. Especially with Mr. Vestal?
A. And others.
Q. 19. Is not Mr. Vestal here now, present?
A. I saw him right there, I guess you are acquainted with him.

The next witness, J. G. ADAMS, having been duly sworn, testified as follows:

Direct examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. How old are you?
A. Fifty two years old.
Q. 2. Where do you live?
A. Atlanta, Georgia.
Q. 3. What is your profession?

A. Photographer.
Q. 4. How long have you been engaged in that?
A. Twenty five years.
Q. 5. Whereabouts?
A. 40½ Whitehall Street.
Q. 6. You have been there that long?
453 A. I have been there about twenty years.
Q. 7. What sort of photographic work have you done?
A. Well, I have done all kinds I ever heard of, except microscopic photography, I have not done much of that.
Q. 8. Where has your work extended?
A. All over the State of Georgia and some of Alabama. In Georgia and Tennessee.
Q. 9. Mr. Adams, I will ask you to state whether or not you were employed by the State of Georgia to take some photographs in connection with the case now pending?
A. Well, Mr. Shippen employed me, I think he said it was for the State of Georgia.
Q. 10. You say you were engaged through Mr. Shippen?
A. Yes sir.
Q. 11. And he stated it was for the State of Georgia?
A. Yes sir.
Q. 12. Have you visited Fannin County and Gilmer County Georgia for the purpose of making photographs?
A. Yes sir.
Q. 13. Have you made such photographs?
A. Yes sir. I didn't know when I was in Gilmer County or Fannin County only as the Counties were mentioned to me.
Q. 14. When was that?
A. I think it was the second of August, the first of August—the second I believe, I have a memorandum.
Q. 15. You can refer to that.
A. It was the third of August I came up here.
Q. 16. In 1914?
A. Yes sir.
Q. 17. Who went with you on that trip?
A. Mr. Vestal and Mr. Frank Shippen and Mr. Vestal's son and Mr. Sharpe.
Q. 18. What sort of camera did you take with you?
A. The size that made eight by ten field, the lense zias astigmatic, that means correct lines, right angles.
Q. 19. Is that a telescopic lense?
A. It is not referred to as that, but they are that, draw back and forth like a telescope.
Q. 20. How is that regarded by your profession?
A. As one of the finest made, the highest of any in that class of lenses.
Q. 21. That is the camera you used in making all the pho-
454 tographs you have brought here?
A. Yes sir.

Q. 22. I hand you a photograph marked No. 1, state whether or not that is your number?

A. That is correct.

Q. 23. Did you make that photograph?

A. Yes sir.

Q. 24. Do you know from your notes or memorandum where that was taken?

A. Yes sir, I will have to refer to my notes to be sure about it, I cannot remember (looking at book) that was made on the way from here, Blue Ridge, here—No. 1 was made on the Blue Ridge and Copperhill road, Eighth District and Second Section about seven miles southeast of Copperhill, made on August 4th, and I file this photograph as Exhibit No. 1 to my testimony.

Q. 25. You are not a botanist or forester?

A. No sir.

Q. 26. What does this particular one show?

A. It shows the dead top across the forest there and the dying trees, that is a lighter shade here, the dead and dying trees with leaves on them, shows the trees that have been in leaves, and the leaves are dying or dead.

Q. 27. That is just on the horizon line?

A. Yes sir, down in front these young trees show they are dead and dying, and in the distance, the horizon shows the dead tops as far as the photograph shows. The photograph which I file as Exhibit No. 2 was taken one mile south of Copperhill looking north, the same section as No. 1.

Q. 28. What does that show?

A. Well, that is to show the smoky condition in the distance.

Q. 29. What is this stack—the Tennessee Copper Company?

A. Yes sir, the Tennessee Copper Company's stack. I don't think the Ducktown smoke shows, it was so smoky there you couldn't see about it.

Q. 30. What day was this taken on?

A. August 4th. The photograph which I file as Exhibit No. 3 to my testimony is on a hill southwest near Hopewell Church, looking toward Cowpen Mountain.

Q. 31. What does that show?

A. It shows the smoky conditions all through there, and the growth of timber near here, dead trees, small and stunted
455 growth.

Q. 32. Are the trees shown in the photograph dead or dying?

A. Some of them.

Q. 33. In the background h*eer*?

A. Yes sir.

Q. 34. This was taken on August 4th?

A. Yes sir. The photograph which I file as Exhibit No. 4 to my testimony was on a certain iron bridge across Fighting Town Creek one fourth of a mile east of Medola.

Q. 35. On what day was that taken?

A. August 4th.

Q. 36. What does this photograph show?

A. That shows the dead trees, the dead tops all through there and the dead young trees, some trees down in the foreground are dead.

Q. 37. What is the color of those trees?

A. Light brown.

Q. 38. In the photograph how do they appear?

A. Well, they are lighter than the dark green.

Q. 39. How does the dark green show up on the photograph?

A. It shows black and white.

Q. 40. And the dead leaves show lighter.

A. Yes sir.

Q. 41. That was taken on what day?

A. August 4th. The photograph which I exhibit as No. 5 to my testimony was taken one quarter of a mile north of Higdon's Store, lying west of Reddic Mountain near the top.

Q. 42. What do the light colored patches show?

A. The light colored patches show dead trees that have died with the leaves on them recently and the outlines show the dead tops that were there dead everywhere up through there.

Q. 43. That was taken on what day?

A. August 4th. The photograph which I file as Exhibit No. 6 to my testimony was taken on Barnes Mountain ten miles southwest of Ducktown, Lot 172 9th and 2nd in Fannin County.

Q. 44. What does this show?

A. That shows the dead tops of trees and dying trees, this was made under adverse circumstances, made against a strong light, it is not so plain as the other.

Q. 45. State whether or not any—in all of these photo-
456 graphs the light shows up the dead and dying trees?

A. Yes sir.

Q. 46. When was that made?

A. On August 4th.

Q. 47. And then.

A. The photograph which I file as Exhibit No. 7 to my testimony is on the Barnes Mountain ten miles southwest from Ducktown, looking southeast.

Q. 48. What does that photograph show?

A. That attempted to show the stack, the stack being dark does not show, only shows a white house which was near there, or the plant one or the other.

Q. 49. What does that show in the back ground?

A. That is all it shows.

Q. 50. What does that show as to the general condition of the atmosphere?

A. Smoky, that is why you couldn't see the stack.

Q. 51. Was it smoky on that day?

A. It was, yes sir.

Q. 52. On what day was that made?

A. August 4th. The photograph which I file as Exhibit No. 8

was taken on Lot 172, 9th and 2nd, looking east on Barnes Mountain, east on Millsaps Mountain.

Q. 53. What does that show?

A. That shows the hills or mountain there and the bushes and a number of dead trees on the mountain. It was some distance away, looking through the trees this way you see them, but that mountain is some distance through there, but it shows a number of dead trees.

Q. 54. That was taken on the 4th of August?

A. Yes sir. The photograph which I exhibit as No. 9 to my testimony was taken on Barnes Mountain looking east on the same section.

Q. 55. That was taken on the same day?

A. Yes sir.

Q. 56. What does that show?

A. It shows dead and dying timber, you can see the injured and dead trees, I think they have their tops dead, they were not live trees, just recently died. Of course, it shows the dead tops all through there. The photograph which I exhibit as No. 10 to my testimony was made on August 5th on Lot 210, 9th and 2nd, a little west of Flat Top.

Q. 57. Do you know how far that was from the furnaces?

457 A. Between nine and ten miles from the furnaces or plants.

Q. 58. What does that show?

A. It shows the smoke had settled in that valley between where we were standing and the other mountain.

Q. 59. What does that haze show?

A. That shows the thickness or density of the smoke at that time.

Q. 60. Is that a true representation?

A. Yes sir, that is correct, as near as it can be made right at us is the—this mountain was about fifty or sixty yards away from where we were, and the next point down here is several miles.

Q. 61. That was taken on what day?

A. August 5th. The photograph which I now exhibit as No. 11 was made on Lot 186, 9th and 2nd, on th- west side, looking southwest on Barnes Mountain.

Q. 62. How far is that from the plant?

A. I don't remember just how far it was, I don't know that I made mention of that.

Q. 63. What does that show?

A. The large timber, the very large timber we had just gotten, to, a number of the trees had just recently died, dead tops and some entirely dead. These right here are the ones whose leaves have just turned light.

Q. 64. What day was that taken on?

A. August 5th. The photograph which I exhibit as No. 12 to my testimony was made on Lot 173, 9th and 2nd, on Pigeon Mountain, northeast of Blue Ridge on August 5th.

Q. 65. How many miles away from the plant?

A. About the same distance as the last one.

Q. 66. What does that show?

A. That shows a number of dead and dying trees.

Q. 67. How are they indicated?

A. By the light blotches, shows the dead and dying. Of course, it does not show everywhere, some trees are entirely dead through there.

Q. 68. To what distance away from them would that lenses you used show up on the photograph?

A. You mean its capacity for distance?

458 Q. 69. Yes sir.

A. Show anything as far away as a star, as far away as the star Sirius. The photograph which I now exhibit as No. 13 to my testimony was taken on August 6th on Lot 23, 9th district and 2nd section, looking a little south of west at Granny Marr Mountain.

Q. 70. What does it show?

A. The dead trees and dying trees, one here, down in the valley, and a number of trees have died recently. A number of trees entirely dead, of course, the dead tops you see that everywhere you get an outline against the sky. The photograph which I exhibit as No. 14 was made from the top of Granny Marr Mountain on Lot No. 24, looking toward Copperhill and five miles away—about six miles from the Ducktown plant I believe.

Q. 71. What day was that taken on?

A. August 6th, 1914.

Q. 72. What does that show?

A. The smoky condition there. We tried to locate the Ducktown Copper Company's plant, you can see the smoke rising there.

Q. 73. Does that smoke rise from the Ducktown Copper Company's plant?

A. Yes sir, the plant is obscured.

Q. 74. What it is obscured by?

A. Smoke.

Q. 75. Could you or not at the time that was taken, see the Ducktown Copper Company's plant?

A. Occasionally we could, when the smoke would shift we could see it distinctly.

Q. 76. What prevented youn from seeing it at other times?

A. The smoke. The photograph which I file as Exhibit No. 15 to my testimony was taken on Lot 54, 9th district and 2nd section, looking across Tumblin Creek.

Q. 77. What does that show?

A. Looking across Tumblin Creek it shows the dead and dying timber.

Q. 78. What day was that taken on?

A. August 6th. *A*. The photograph which I file as Exhibit No. 16 to my testimony was taken on Lot 28, 9th district and 2nd section, on Tumblin Creek.

Q. 79. What day was that taken on?

A. August 6th.

459 Q. 80. What does that show?

A. Large timber dead.

Q. 81. What are those?

A. They are hemlocks, those tall trees, the two trees of which the tops are not shown are not dead, in the center of the photograph. The photograph which I file as Exhibit No. 17 was taken on Lot 27, 9th and 2nd, looking southeast one quarter of a mile from where the last photograph was made—No. 16.

Q. 82. Taken on what day?

A. August 6th.

Q. 83. What does that show?

A. That shows the dead and dying timber. These trees down here where the light spaces are shows they are dead. Dead leaves on them, and dead tops all through there. The photograph which I Exhibit as No. 18 to my testimony is from Burnt Store Church three and one half miles from the Ducktown Copper Company's plant.

Q. 84. On what day was that taken?

A. On August 6th.

Q. 85. What does that show?

A. That shows thick smoke through there settled all through the country as far as we could see.

Q. 86. Is that a true representation of the smoke conditions on that day?

A. Yes sir. The vertical black streak on the right there is not smoke, but a defect in the plate, but the general hazy condition is caused by smoke.

Q. 87. What is that white spot just below the vertical black streak which you referred to?

A. I have not got any memorandum on that, I don't know what it is.

Q. 88. The white part there?

A. That is one of the plants.

Q. 89. Just below the line and east from the edge of the photograph?

A. Yes sir. The photograph which I file as Exhibit No. 19 to my testimony was made from near Hopewell Church looking east.

Q. 90. On what day?

A. The seventh of August.

Q. 91. About how far from the plants of the Ducktown Copper Company and the Tennessee Copper Company?

A. About two and one half or three miles.

Q. 92. What does that show?

A. That shows the smoke as it drifted into the valley toward Georgia. It shows the North Carolina Mountains from the

460 top, over the top of that smoke.

Q. 93. Is that white streak up through there smoke?

A. Yes sir.

Q. 94. It has the appearance of a cloud?

A. Yes sir, it shows the furnaces over the otp. The photograph

which I file as Exhibit No. 20 to my testimony is of the Ducktown plant.

Q. 95. On what day was that taken?

A. The 7th of August.

Q. 96. What does that show?

A. It shows the plant at close range, and the smoky conditions around there.

Q. 97. Is that what the haze in the photograph is due to?

A. Yes sir. The photograph which I file as Exhibit No. 21 to my testimony is the same plant looking north, taken the same day, within an hour or so after the other one.

Q. 98. What does that show?

A. The same conditions as far as smoke conditions are concerned. The thickness of the smoke around it.

Q. 99. Is the haze in that photograph due to the smoke?

A. Yes sir. The photograph which I file as Exhibit No. 22 to my testimony was taken south of the plant of the Ducktown Company looking south toward Georgia.

Q. 100. Taken on what day?

A. August 7th.

Q. 101. What does it show?

A. That shows the general smokey conditions, the barren soil—especially the barren soil east and the washings on the hills. No. 23 seems to be absent. 23 and 24 were the same and we just omitted 23 because it was a duplicate of 24.

Q. 102. State about 24.

A. That is a view of the Tennessee Copper Company's plant.

Q. 103. On what day was that taken?

A. August 7th.

Q. 107. What does it show?

A. It shows the plant. This was probably about half or a quarter of a mile from the plant looking north—northwest.

Q. 108. What does it show as to soil?

A. It is a barren soil and the hills have been washed very much, and it shows the amount of smoke coming from the acid plant.

461 Q. 109. What is this here (Indicating on photograph)?

A. That is smoke rising from the Ducktown Copper Company's plant. The photograph which I file as Exhibit No. 25 is a view from over the line in Georgia, a view of the Tennessee Copper Company's plant, and shows the general conditions the same as in No. 24, and the location of this smoke here.

Q. 110. About four inches to the right of the photograph there appears a little slot, what is that?

A. That indicates the position of the Ducktown Copper Company's plant.

Q. 111. Is that smoke from the plant?

A. Yes sir, smoke from the Ducktown Company's plant.

Q. 112. I will ask you to state if you observed the soil and the hillsides about the two plants?

A. I did.

Q. 113. State whether or not the photographs shows accurately the conditions, and what the conditions appeared to be.

A. Yes sir, they were made to show the correct conditions around the plants and it was absolutely barren, there was no herbage, but of course, there was a little green stuff growing,—There was a little green stuff growing off some distance from the plants, but right around the plants it was absolutely barren.

Q. 114. Did you, as you passed through the forests of Georgia, observe the general condition of them?

A. Through the forests of Georgia?

Q. 115. Yes sir.

A. You mean on this trip?

Q. 116. Yes sir.

A. You say did I observe the general conditions?

Q. 117. Yes sir.

A. Yes sir, that is what I did.

Q. 118. What was the condition?

A. Well, the forests seem to be dying in every direction as far as I went on this trip.

Q. 119. Have you been in other forests?

A. Yes sir.

Q. 120. As compared to other forests, would you undertake to say what the condition of this forest was?

A. Yes sir, from what I have observed it was in bad condition as compared to healthy forests I have passed through.

462 Q. 121. Do the photographs which you have exhibited as Exhibits to your testimony show the isolated spots or the general conditions of the forests?

A. It is a true representation of the general conditions.

Q. 122. State whether or not you selected isolated parts or spots of the forests from which to take your photographs?

A. I did not.

Q. 123. How did you select them?

A. From points where I could get a view. Perhaps there are places that would show equally as bad as this but I could not get a photograph of that on account of the poor light, underbrush and such as that.

Q. 124. Did the gentleman who conducted you direct you where to take them, or did they tell you where they wanted you to take them?

A. They told me where I was. They of course, conducted me to places showing this condition, at certain distances from these plants.

Q. 125. They gave you *rou* distances, or you got your distances from them?

A. Yes sir.

Q. 126. I believe you say you took all these photographs personally?

A. Yes sir.

Q. 127. Are these photographs enlargements?

A. They are.

Q. 128. How are they made, without going into detail?

A. Well, we have a large camera, almost identical with the smaller ones, only a larger size, and the paper is placed in a plate where the plate would be in that camera, and the picture is made by the light shining from the place already made.

Q. 129. From the original negative?

A. Yes sir.

Q. 130. Do these enlargements show accurately or not the photograph as it was made?

A. It shows it exactly, only it is larger.

Q. 131. Are they as accurate as the original negative?

A. Yes sir, they are.

Q. 132. It is a print from the original negative?

A. Yes sir, that is all.

Cross-examination.

By COUNSEL FOR DEFENDANT:

463 Q. 1. You, of course, are not a botanist?

A. No sir.

Q. 2. Or a chemist?

A. No sir, only in photographic c-emistry.

Q. 3. As a matter of fact you have followed the profession of photography pretty much all your professional life?

A. Yes sir.

Q. 4. How long have you been a photographer?

A. About twenty five years.

Q. 5. You have not made a specialty of the study of forestry have you?

A. No sir.

Q. 6. Did you ever take many photographs in forests?

A. Yes sir, a great number of them.

Q. 7. Where?

A. Well, I have made them for geographical purposes, and for showing the mountain scenery, and for foresters showing the size of growing trees all through Georgia, several places in Georgia.

Q. 8. You have never of course, made any study of the diseases of trees?

A. No sir.

Q. 9. You have seen dead trees all through the forests?

A. Yes sir.

Q. 10. You come across dead trees everywhere?

A. Some dead trees in all forests.

Q. 11. In some you will find more than in others?

A. Yes sir.

Q. 12. You have seen forests far away from the Ducktown section where there is quite a number of dead trees?

A. Well, not a great number of dead trees, I don't remember ever seeing a forest where there was such a large number of dead trees, but, of course, there are more in some places than in others.

Q. 13. You never went through the Cumberland Mountains?

A. No sir.

Q. 14. Nor along the western part of East Tennessee?

A. No sir.

Q. 15. You don't know about the trees there?

A. No sir.

Q. 16. I believe in looking over your photographs, most of the dead trees which you have shown are either white pine or hemlock, are they not?

A. Well, quite a number of oaks.

Q. 17. But by far most of them are white pine and hemlock?

A. Most of them are.

Q. 18. You don't know it to be a fact that the hemlocks
464 are dying in other places?

A. No sir.

Q. 19. And that the white pines are also dying in different places far away from here?

A. No sir, of course, those trees are dead, but I don't know what killed them.

Q. 20. Who was with you?

A. Mr. Vestal and Frank Shippen and Mr. Vestal's son, John Vestal, and Mr. Sharpe.

Q. 21. They guided you through the mountains?

A. Mr. Vestal principally guided us through the mountains.

Q. 22. That is they took you to certain general sections on the mountains?

A. Yes sir.

Q. 23. And left you to take your photographs in those sections?

A. That is the idea.

Q. 24. You didn't suggest to them to go somewhere else in the mountains.

A. No sir.

Q. 25. They just guided you to general sections and you took your photographs in those sections?

A. Yes sir.

Q. 26. Now, Mr. Adams, were your exposures instantaneous or were they prolonged?

A. Well, yes and no. In some cases they were instantaneous, depending upon the conditions of the light.

Q. 27. Now, could you tell which ones of these photographs were taken instantaneously? Have you any idea?

A. Yes, I could,——

Q. 28. What photographs were they, and do the photographs themselves show?

A. No, they wouldn't show, no one else could tell. Just be my memory of the conditions.

Q. 29. Will you glance down your memorandum and designate those taken instantaneously to the best of your recollection?

A. (Looking at book:) If you will allow me, I could do it more accurately by glancing at the photographs.

Q. 30. Well, do that.

A. Those made instantaneously are No. 9, 11, 13, 14, 19, 24, 25, 1, 4, 5, 6, 8, 10, 15, 16, 17, 18, 22.

Q. 31. About how long did you expose the plates in the photographs?

465 A. The exposures varied from one second to three seconds.

Q. 32. What kind of plates did you use?

A. What make?

Q. 33. Yes sir.

A. It was a plate made by the Traynor Company.

Q. 34. Does it have any special names?

A. No, they go by numbers, A. B. C. that corresponds to B.

Q. 35. They are just ordinary plates used by photographers?

A. Yes sir, used for pictures and views also.

Q. 36. They are not what is commonly know- as ortho-chromatic plates?

A. No sir.

Q. 37. Did you ever use a color screen?

A. I did not.

Q. 39. What is the object of the color screen?

A. The object is to give the *l*re-ative value of colors to better advantage, but from my experience it does not do that, that is why I do not use it.

Q. 39. It is the purpose of the color screen to give the exact color, the exact hue?

A. To come nearer giving the colors values, what I mean is this. The light is stronger on certain objects with one color screen and stronger on other objects with another color screen, for instance, I might take a red colored screen and make a picture of the United States flag, it wouldn't give any red stripes at all, the red stripes would take white.

Q. 40. Why is that?

A. I am unable to explain, it is because, I think,—it is explained in the catalog, the formula—it is,—I don't believe I could give you an intelligent definition of it, I cannot afford to try to tell.

Q. 41. Anyway, this color screen which is an attachment which has been invented for which it is claimed that when used it makes the pictures more accurate?

A. As to color values, yes sir.

Q. 42. You don't use that.

A. I find that it is not true.

Q. 43. I didn't ask you that, I ask you if you used it?

A. No sir, I do not.

Q. 44. But a great many photographers do use it?

A. I do not know, I never saw one who did.

466 Q. 45. Did you ever practice color photography?

A. No sir.

Q. 46. Did you ever take one of those pictures that showed the exact color of the pictures you took?

A. No sir.

Q. 47. Did you ever try that?

A. I say color photography is a branch of the science, of the art, rather, with which I am wholly unfamiliar,—I cannot say that I am unfamiliar with it, but I know this much about it, that it has never been done.

Q. 48. You know a thing has never been done about which you know nothing?

A. I cannot say that I know nothing about it, I know it has never been done.

Q. 49. You never tried it?

A. Yes sir, because I never think it could be done. All color photographers you ever saw or had referred to you is mechanically done.

Q. 50. You never climbed the Alps?

A. No sir.

Q. 51. Do you judge from that it cannot be done?

A. No sir, but I have seen so many evidences or demonstrations of this I know it has never been done.

Q. 52. That- is no such thing as taking a photograph of a red object which shows red in the photograph?

A. With a single exposure.

Q. 53. By taking one picture that cannot be done?

A. No sir, not in photography.

Q. 54. Yet you never tried it, but swear it cannot be done?

A. I have had it demonstrated to me time and again, but I have never seen it done. I have never seen it accomplished. If you will allow me, I will explain what that so-called color photography is.

Q. 55. If you want to, but I didn't ask for an explanation.

A. All right, but nobody can make a colored photograph with a photographic plate, they do not take color.

Q. 56. What kind of plates is used?

A. They use several plates to make the different colors.

467 Q. 57. Now, Mr. Adams, you take an ordinary dark picture like these present here, the different shades on the photograph depend altogether on the amount of light reflected from the object which you are taking?

A. Not altogether,—May I illustrate?

Q. 58. Certainly.

A. You make a photograph of ordinary exposure, and get a plate of normal or ordinary strength, you can take that plate and make it so you cannot see anything in the foreground at all.

Q. 59. That is a manipulation inside of your gallery?

A. The same thing as printing it over, only those are correctly printed and the others would be incorrectely printed, you couldn't print anything if it was exposed to the light long enough, and.——

Q. 60. You mean you can go into a dark room and make a photograph show anything you want to?

A. No sir.

Q. 61. What did you mean?

A. I mean just what I say. I could have exposed these very prints here, I could have exposed them to the light long enough to

turn this down here (Indicating) so dark that it wouldn't show any detail at all, that is it would be nearly flat.

Q. 62. You mean the atmosphere there?

A. Yes sir, there would be only the black part.

Q. 63. The longer you expose a photograph the smokier appearance you will put into it?

A. No sir, the darker.

Q. 64. The more hazy?

A. Yes sir, the more hazy appearance.

Q. 65. You can expose all your photographs until it looks like night-time?

A. Yes sir, these,——

Q. 66. You could have pointed your instrument toward the Ducktown Basin in midday light and exposed it until the whole picture would have looked like night, or just after night had come down?

A. No, I thought you was talking about the picture. You take the negative when you expose the plate.

Q. 67. I don't care about that, I am talking about taking a picture. You could have taken it at midday, and by exposing it for some length of time, it would be more hazy and look like it was taken after night time? Is that true?

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A. I don't think I can answer the question that way. If you expose the plate long enough there wouldn't be any detail at all, couldn't tell it was made for a picture at all.

Q. 68. The longer you expose it the more shadow you put in the picture?

A. No sir.

Q. 69. The darker the picture will be?

A. No sir.

Q. 70. Is it a good light picture?

A. Yes sir.

Q. 71. Does it get lighter?

A. Yes sir.

Q. 72. Why will it appear absolutely dark if exposed still longer?

A. You are talking about plates, plates and pictures are absolutely different. I can take a properly exposed plate and make a photograph as black as night or make it light from properly exposed plates, but if I expose my plate a long time, the normal exposure, I would have no picture at all.

Q. 73. Then the amount of haze would depend largely on the length of time you are in printing the picture from the plate, what do you mean by that when you speak of getting a darker picture from an exposure?

A. Yes sir, it gets darker, but you can put in,——

Q. 74. What is — you expose to make it darker, the photograph or the plates?

A. The photographs are plates after the plates are made.

Q. 75. Now, going back to what I asked you a while ago you say that color in the photograph is not dependent largely upon the amount of light reflected from the object?

A. Well, of course, it has nothing to do with the color of the photograph, the amount of light of the object has nothing to do with the color of the photograph.

Q. 76. It makes it either light or drak, not the exposure of the plate,——

A. Not the exposure of the plate, it is the print of the photograph from the plate.

Q. 77. Do you mean to say a light object does not show different on the plate from a dark object?

A. Yes sir, it does show different.

469 Q. 78. Is that because the light object refelcts more light than the dark one?

A. Yes sir.

Q. 79. Does not — make quite a difference if the object, the picture of which you are taking reflects much or little light?

A. It makes very little difference sir.

Q. 80. Well, then please tell me why a light object will not have the same shade in the photograph as the dark object?

A. It is just like looking against a wall, the wall there is white above the wainscoting, below is a different color, and if you make a photograph, one will show lighter than the other.

Q. 81. Because the object above is lighter.

A. Yes sir.

Q. 82. Well, why is it the object will show lighter in the picture. These photographs here are not color photographs, and you don't undertake to show colors at all?

A. No.

Q. 83. Why is one lighter than the other?

A. Photographic colors depends on light and shade, they only take from black to white, all gradations between black and white. You could take a black object and make it a distinct photograph of the object as easy as you can of the white one.

Q. 84. That is because there are light objects around it?

A. Of course there has to be something to contrast it with to show that.

Q. 85. Then why is it the light wall will show light in a picture when the dark wall will show dark?

A. The wall is light.

Q. 86. Is not that because the light wall reflects and the dark wall does not?

A. Probably.

Q. 87. Don't you know that is so, or do you know anything about it?

A. That is my observation.

Q. 88. Do you or not know it is because the light wall will reflect light and the dark will not?

A. It is not a question of reflection at all.

Q. 89. Don't you know that photography of that kind depends all together on reflection of light?

A. No sir.

Q. 90. You have no such things as reflection of light on
470 an object in photography, is that true?

A. I don't think I get the idea of it.

Q. 91. If photography does not depend upon reflection of light, tell why you can see that well, do you know why you can see that wall?

A. Yes sir.

Q. 92. Why?

A. Because I have natural vision.

Q. 93. Suppose you had the best eyes on earth, would that alone enable you to see the wall?

A. No sir.

Q. 94. What is it about light which causes you to see the wall, is it not because the light — reflected from the wall to the eye?

A. I suppose so.

Q. 95. Don't you know so?

A. (No answer.)

Q. 96. Don't you know that much about physics?

A. I don't judge photography that way.

Q. 97. Is it not true that you don't know anything about the science of photography at all?

A. If that is what you are trying to get at, I suppose I don't.

Q. 98. You don't know that shades in photographs are the results of reflection of light you are photographing?

A. The reflection would be on the plate.

Q. 99. What I am getting at is this, don't you know that a healthy green leaf reflects more light than a brown dead leaf?

A. It does not, I know it does not.

Q. 100. Did you ever measure it?

A. I most assuredly have.

Q. 101. When and how?

A. I have been measuring it for twenty-five years every few days of my life by the photographic process.

Q. 102. And yet you say that a dead leaf will reflect more light than a green leaf?

A. It depends on the color of the leaf, a dead black tree or leaf will not reflect as much as something lighter.

Q. 103. Don't you know that brown reflects less light than green?

A. No sir.

Q. 104. You say that red reflects less than green?

471 A. It depends on the shade of red.

Q. 105. Is not brown one shade of red—is not brown nearer the shade of red than green is?

A. I don't think so, not the color values of it, it is not.

Q. 106. Did you ever see light reflected from a black surface?

A. Of course. I don't see any reflected light from black objects there (Indicating) but if there was a black object there that had a shiny surface to it, it would reflect light.

Q. 107. What colors show up lightest in a picture?

A. Well, of course, white is first, that is not a color, light blue

shows next lightest, pink, light green, any of the lighter tints except red or yellow, yellow shows up very dark. Any shade of red or yellow shows dark.

Q. 108. Is not brown a shade of red?

A. Some of them are.

Q. 109. Brown is not in the rainbow, it is not one of the elementary colors?

A. No sir.

Q. 110. So as a matter of fact brown is a shade of red, is that true?

A. Yes sir.

Q. 11. Then don't you know it would show darker than green?

A. No sir, I do not.

Q. 112. Well, maybe, it was those particular trees that you took would not show dark?

A. Maybe so.

Q. 113. Anyway, you pretend that these light spots are brown trees?

A. Some are.

Q. 114. What other colors are shown by those lights spots than brown?

A. Well, the ground shows lighter, where you see ground through the — that shows lighter usually.

Q. 115. What was the color of the ground anyway, was it sandy?

A. Some was rock, barren rock.

Q. 116. Now, I show you photograph No. 11, do you pretend that those smaller trees in the near foreground there were killed?

A. Which is that? (Looking at picture.) No sir.

472 Q. 117. What was the color of those leaves?

A. They are either light green or dark green, very shiny, they catch the light and throw it up.

Q. 118. So it is that in that foliage on the smaller trees in the foreground of No. 11, were all in perfectly healthy condition and were green, is it not?

A. I cannot say all were that way, some are not.

Q. 119. I wish you would point out one that is not, one that shows different?

A. I don't know that I can point out one, but I know some were not as healthy as others, but some were unhealthy here.

Q. 120. Those are laurel leaves,——

A. Those are laurel leaves, or something with a very highly polished leaf.

Q. 121. These leaves were green?

A. These laurels are very bright green.

Q. 122. The lightest foliage shown in any place in that picture is the foliage there on No. 11, that is true?

A. I guess it is, I have not examined that,—but that is very light.

Q. 123. Those leaves which show light there were green?

A. Most of them were, yes sir.

Q. 124. Don't you know that is because there was a good deal of light reflected from those leaves?

A. Sure, yes sir, The light there was high, coming from top, the camera being above them reflected the light back on it.

Q. 125. Now, of course, in No. 2, the light places shown there was the ground, I believe you say, and that is because the ground was sandy?

A. Yes sir, that is the ground, that is the space through here.

Q. 126. That picture does not show any dead trees at all?

A. No sir, just a small growth there.

Q. 127. So it is, that all the growth shown in that picture was alive, and the ground there, and the foliage was all green, wasn't it?

A. No, not all.

Q. 128. Show me any of it that was killed?

A. I don't know that I can find any at all, but I know that some of the smaller bushes were dying.

Q. 129. Point out anything the smoke—point out any-
473 thing in that picture that shows to be dying?

A. Well, there is one here by this house. (Indicating) I think that is dead there.

Q. 130. Your picture does not show it?

A. Not much.

Q. 131. So you are not testifying from facts that are shown by the photographs at all?

A. It shows lighter than some of the other trees.

Q. 132. But still some of the others show lighter than it.

A. I don't see any that does.

Q. 133. You see a good many that shows as light.

A. Not much difference, very little.

Q. 134. Now, that picture does not show any dead trees at all? Now, that picture which does not show any dead trees at all is the picture which shows the Tennessee Copper Company's plant and quite a scope of Country lying south of that plant, is not that true?

A. I think it is lying south of the plant, yes sir.

Q. 135. I show you a picture which shows quite a scope of country lying immediately south of the Tennessee Copper Company's plant?

A. Yes sir.

Q. 136. And the foliage on all of those trees is shown to be green and in a healthy condition, so far as the picture is concerned?

A. I will state this further about that,——

Q. 137. Answer my question, and then state.

A. I beg pardon.

Q. 138. (Stenographer repeats question).

A. I didn't say it was all healthy, I said that there was some exception.

Q. 139. But the picture does not show them to be unhealthy?

A. Well, that is all right, what I was going to say, it was made when the sky was overcast with clouds on those trees.

Q. 140. Well, still if the sky was overcast, a tree that would reflect less light on a bright day than another one, would reflect less light than the other when the sky was overcast?

A. It don't reflect so much.

Q. 141. That is none of the trees would reflect so much?
A. No sir.
Q. 142. Now, Mr. Adams, in Picture No. 9, I see a big dead tree on the left hand side, you have no idea what killed that tree?
474 A. No sir, it was old and the bark was off.
Q. 143. And there are a number of other trees shown to be stripped of foliage that have been dead for some time you don't know when they died?
A. No sir, some of the smaller twigs have died recently, I could tell by that. They hadn't been dead so long as those in the corner.
Q. 144. That is those have smaller twigs, and you judge them to not have been dead so long as the one in the corner?
A. That is the idea.
Q. 145. What kind of tree is that in the corner?
A. I think it was a chestnut.
Q. 146. You don't know, of course, whether it is true that chestnut is dying through the country, all through the southern country?
A. No sir.
Q. 147. Did you take any notice of whether there had been any forest fires?
A. Yes sir, I did, I noticed it.
Q. 148. That there had been?
A. I noticed that there had been forest fires, and always avoided getting them in the pictures, I never made any evidence of forest fires.
Q. 149. That is this year?
A. Yes sir, within a year I should judge.
Q. 150. These trees might have been killed by forest fires some years ago?
A. Might have been, must have been some time ago. Evidently this had been dead a number of years.
Q. 151. Have you any definite recollection about the location of those trees claimed to be dying in this picture No. 9?
A. Please state the question.
Q. 152. (Stenographer repeats question.)
A. You mean the location of them on the picture?
Q. 153. Yes sir.
A. I don't remember where they were on the picture.
Q. 154. That is you stood before those trees, and independent of this picture, have you any recollection as to where any one of these trees with brown leaves were located?
A. No sir.
Q. 155. Now, as a matter of fact you are just guessing when you say that the photographs showed the trees that had brown leaves, is that so?
475 A. I don't think you could say I am guessing. The light trees show the dead and yellow leaves, some of those leaves were almost white.
Q. 156. You just said a while ago that yellow color would show dark, you swore that a while ago?
A. Yes sir.

Q. 157. Well, you swear now that it shows light?

A. I said when they were brown they were almost white, they take lighter than light green leaves do.

Q. 158. You swore a while ago that yellow leaves didn't show anything, but that light leaves,——

A. Did I swear those were yellow leaves?

Q. 159. You will have to rely upon your recollection.

A. Didn't you make the answer to it.

Q. 160. He has the answer all right. Now, did all those leaves when killed, turn white?

A. If they have been dead any length of time they are nearly white.

Q. 161. So those leaves you saw up there on the mountain with Mr. Vestal and Mr. Frank Shippen that are claimed to have been killed by smoke, they were all white?

By COUNSEL FOR PLAINTIFF: We except to that part of the question assuming that Mr. Frank Shippen testified, or Mr. Vestal claimed to the witness that they had been killed by smoke, or that any claim was made to him, and there is no evidence on which to base such a question.

Overruled. Appeal prayed and granted.

Q. 162. (Stenographer repeats question.)

A. No, I never said white, I said very light and very nearly white.

Q. 163. They were not brown?

A. No sir.

Q. 164. And they were not yellow?

A. They were a very light yellow.

Q. 165. But they were white?

A. No sir, I never said white.

Q. 166. Nearly white?

A. Yes sir, nearly white.

Q. 167. All of them?

A. Not all of them.

476 Q. 168. And what wasn't brown were white?

A. No sir.

Q. 169. You never saw any trees said to have been killed by smoke before?

A. No sir.

Q. 170. This is your first experience?

A. Yes sir.

Q. 171. And really you don't know that this smoke does brown leaves, do you?

A. No sir.

Q. 172. Mr. Adams, do you know anything about the different kinds of trees?

A. Well, something, yes sir.

Q. 173. Were you raised in the woods?

A. I was raised in the country, I can pick out the pine, the oak, the hickory and such as that.

Q. 174. Were not a good many of these photographs taken around the edges of old fields?

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A. No sir.

Q. 175. Some of them were, were they not?

A. I don't recollect but one, there may have been others, but I don't remember but one now. I took one looking toward Granny Marr Mountain, made a picture right across a field.

Q. 176. No. 13 shows a fence, which shows that it was taken right at the edge of a field?

A. Yes sir, that is the one I am speaking of, there may be others.

Q. 177. Now, Mr. Adams, in regard to No. 14, in the distance between the upper part, the right of the photograph, there is shown a furnace, now as a matter of fact that is the Tennessee Copper Company's furnace is it not? Look at it?

A. This one here, you mean?

Q. 178. Yes sir.

A. Is that the one I said I was not certain about?

Q. 179. I am not sure whether it is or not.

A. I think it is. I am almost positive that is the Tennessee Copper Company, I think that is the one I said was the Ducktown Copper Company, but was mistaken. My memorandums stated it was the Ducktown Company but I think it is the Tennessee Copper Company's plant.

Q. 180. In what direction from the Tennessee Copper Company was the point where you were located when this photograph was taken, this No. 14?

A. (Looking at Book.) We were looking northeast, nearly
477 north, I think. We were south of the plant.

Q. 181. As a matter of fact this photograph does not show the Ducktown plant at all, or any smoke issuing from it?

A. No sir, we could see it but the smoke was so dense we couldn't bring out any photograph, it don't appear in the photograph.

Q. 182. That is that when there is any haze of any consequence in the atmosphere, you can see an object that the picture will not show?

A. Sometimes, that is the case.

Q. 183. Now, in regard to that smoke in the atmosphere, there are two stacks, two furnaces, that is each plant has a furnace stack?

A. The one at the Ducktown Company's plant seems to be a very small low stack, a small stack there, a chimney. This other one has a stack about three hundred feet high.

Q. 184. Then there are the stacks coming up from the power houses which emit smoke, is that true?

A. I think so, yes sir.

Q. 185. Then there is the Burro-Burro Mines, a stack there that emits smoke?

A. I am not familiar with them, I don't kno- what they were if I should see them.

Q. 186. There are eight or ten stacks which emit smoke?

A. I could see smoke in several places.

Q. 187. Those were emitting smoke—that was coal smoke, black smoke?

A. Some of them were.

Q. 188. As a matter of fact, the smoke that comes out of the furnace stack is the lightest smoke in the basin, it has a lighter color?

A. Yes sir.

Q. 189. So, that haze in that basin there, that smoky condition must have been produced from the dark smoke emitted from these various mines, is not that so?

A. I couldn't tell you.

Q. 190. You know something about smoke, you live in Atlanta, the smoke from those stacks around there in the basin, the smoke from the two plants some distance apart,——

478 A. I don't know how far apart they were, or how many there were of them.

Q. 191. Anyway, all this smoke went up in the atmosphere and diffused?

A. You could see it rising up there in the basin.

Q. 192. And the smoke from all of them got together?

A. Probably so.

Q. 193. And all the smoke that was emitted and produced there, it made a haze all over the Ducktown Basin?

A. Yes sir, it did, helped to do it.

Q. 194. You live in Atlanta?

A. Yes sir.

Q. 195. You have seen times when there was so much smoke you could hardly see across the street?

A. Yes sir.

Q. 196. Coming from those stacks around there?

A. Yes sir.

Q. 197. A lot of manufacturing plants, Atlanta, is quite a manufacturing city?

A. Yes sir.

Q. 198. You have seen the time when you couldn't take the photograph of a house across the street because of the smoke?

A. Not without a long exposure and then I wouldn't get a good photograph.

Q. 199. That on account of the smoke?

A. Yes sir.

Q. 200. Were you ever in Pittsburg, Pennsylvania?

A. No sir.

Q. 201. Now, this photograph, No. 19, was intended to show the smoke along that valley?

A. Yes sir, I don't know what the valley is called, they called it the valley between where we were standing and the mountain range that showed there (Indicating) on the east.

Q. 202. Now that was smoke floating out of the Ducktown Basin?

A. Yes sir.

Q. 203. How much furnace smoke was in that, and how much coal smoke, you don't know?

A. I don't know, but it seems lighter than other smoke though. You can trace it all along there.

Q. 204. Do you know what makes the furnace smoke lighter than the other smoke in the clouds, in color?

A. I do not, only what I have been told, and I am not testifying what I have been told.

Q. 205. Now, coming to No. 20, which appears to be a photograph of the Ducktown Plant, how near were you to that plant when you took this picture?

479 A. About fifty yards, I think, maybe more, between fifty and one hundred yards.

Q. 206. That is what makes it show up so large?

A. Yes sir.

Q. 207. Now, toward the left of the picture, is that the stack of the Ducktown furnace?

A. I take it to be the stack.

Q. 208. Of the furnace?

A. Yes sir. That is all I can say.

Q. 209. That show relatively the highet of that plant to the stack?

A. Yes sir.

Q. 210. And I believe this photograph also shows that the tank, the water tank is higher than the plant or stack either?

A. I think that is correct. Have to make allowance for this, I think nearer the plant, about the middle part of this thing, we were standing on lower ground, that would make it look like it was higher than the buildings—but it is higher than the buildings, I think.

Q. 211. Now, taking photograph No. 21, that shows more clearly that the tank is higher than the building?

A. Yes sir.

Q. 212. How near were you to the building when you took No. 21.

A. Thirty or forty yards further away than when we took No. 20.

Q. 213. Something like ninety yards?

A. About a hundred yards, I reckon.

Q. 214. Now the furnace stack is so low that the photograph fails to show it entirely?

A. You don't see it from this side, no sir.

Q. 215. Were you not standing on the highest hill around the plant when you took it?

A. I cannot say whether the highest hill or not.

Q. 216. It was on a hill?

A. In or near the road as it comes around up here. (Indicating) we were on a hill.

Q. 217. What is this showing in the right hand side of the picture, are those telephone poles?

A. I think those were on one of the buildings, I couldn't say positively, I don't remember.

Q. 218. You don't know whether those are telephone poles or stacks from the power house?

A. I don't think they are telephone poles, they wouldn't look that large at that distance.

480 Q. 219. Do you know where the power house of the company is located?

A. I think it is to the right up here, to the right of where we were making the pictures, looking north.

Q. 220. No. 21 is looking north?

A. Yes sir, I think that is called the power house, I think somebody mentioned that was the power house.

Q. 221. They have six stacks to the power house?

A. I didn't count them.

Q. 222. They had several?

A. Yes sir.

Q. 223. And you think it is those stacks showing in the photographs here?

A. Yes sir.

Q. 224. They burn coal in the power house, their engines and boilers, to operate their machinery?

A. I suppose so, coal or coke, I don't know which.

Q. 225. If they burn coal that would produce a heavy black smoke?

A. Yes sir.

Q. 226. Do you know whether bituminous coal has sulphur in it?

A. Yes sir, it has some.

Q. 227. Did you ever smell it?

A. Yes sir.

Q. 228. Very distinctly?

A. Yes sir.

Q. 229. Can you smell sulphur in smoke oftentimes around Atlanta?

A. Yes sir, if you get very close to it, you can.

Q. 230. You have smelled it in the smoke around Atlanta?

A. When near to it.

Q. 231. You mean when near to the furnace where it is coming from?

A. Yes sir.

Q. 232. Now, No. 24 shows the Tennessee Copper Company's plant.

A. Yes sir.

Q. 233. How far were you away from this plant when you took this photograph?

A. A little further in one than the other.

Q. 234. No. 24 was how far away?

A. I should saw a little over a quarter of a mile.

Q. 235. How far away were you when you took No. 25?

A. About one hundred yards further.

481 Q. 236. That is the reason this plant does not show up very much larger than the Ducktown Copper Company's plant, is it not, you took the one close up to it and the other was taken a quarter of a mile away?

A. That is it, the further away you get the smaller it will look.

Q. 237. If you had taken the Tennessee Copper Company's plant fifty yards away, it wouldn't have all shown on the picture, would it?

A. I don't know, I think it is a larger plant, a longer plant than the Ducktown plant.

Q. 236. Didn't it have the appearance of being very much larger than the Ducktown plant?

A. I don't know, the Ducktown plant looks pretty big to me.

Q. 237. Was that the first time you ever saw either one of them?
A. Yes sir.
Q. 238. Standing fifty yards away from the Ducktown plant, it looks about as large as the Tennessee Copper Company's plant when you stand a quarter of a mile away, is that about it?
A. No, you see the Ducktown plant takes up the entire picture practically and this one takes up one third.
Q. 239. But if you had been fifty yards, that is fifty yards away from the Tennessee plant, you couldn't have gotten it all on that picture?
A. I think so, I think it would have pulled it up, if you could have gotten this same view.
Q. 240. Now this picture No. 24 shows several other stacks emitting smoke, at least a few, some there which were no- emitting smoke at that time, is that so?
A. Yes sir, there is one, I think that is one there.
Q. 241. It shows other stacks not emitting smoke too, is this one?
A. I don't know.
Q. 242. There is one?
A. Yes sir.
Q. 243. There is one?
A. I don't think this is *an* stack, but a tower of some kind. There is one here that don't show any smoke.
Q. 244. Now, your photographs also show that immedi-
482 ately around this plant the land is barren? Of course, you don't know how long it has been barren?
A. No sir, I don't.
Q. 245. You don't know whether the soil has all been washed off, did you notice enough to know that?
A. I notice that one of the photographs shows in a number of places that the soil had been washed off, gulleys and ruts.
Q. 246. There is no indication of any trees or vegetable growth of any kind for several years, was there?
A. The land was practically bare right around the plants there, no indications of vegetation there for some time.
Q. 247. You didn't notice those gardens and lawn- in Ducktown?
A. I did notice one, I noticed a corn patch and one lawn and grass plot near Ducktown in front of somebody's residence.
Q. 248. I believe photograph No. 5 is another photograph taken near an old field, wasn't it?
A. Yes sir, that is another one.
Q. 249. In the foreground there was corn field?
A. Yes sir.
Q. 250. Do you see anything wrong with the cornfield?
A. Well, it was not very good corn, I don't know from what it was caused.
Q. 251. It hadn't grown large?
A. I think it was about grown.
Q. 252. But it hadn't grown large?
A. No sir, not large corn.
Q. 253. What was its condition?

A. It was yellow an- had some spots on the blades. In a number of cases I noticed the dry leaves.

Q. 254. You don't mean the whole field had turned yellow?

A. No sir.

Q. 255. You saw here and there yellow blades?

A. No sir, just spots as if something had caused the spots.

Q. 256. Spots on the fodder?

A. Yes sir.

Q. 257. The fodder was green where there was no spots?

A. Yes sir, it was right green, not a dark green.

Q. 258. You don't know what kind of land it was, whether the land was poor or not?

A. I don't know, I couldn't tell.

483 Q. 259. Did the green blades show up very light?

A. Very light.

Q. 260. Along in front the fodder is light?

A. Yes sir, that reflects the strong light.

Q. 261. Now take No. 12, I see some bushes in the foreground of this picture*m* what were they—was that laurel?

A. (Looking at photograph.) No sir, that is not laurel I don't know what they are.

Q. 262. They were,——

A. They had a shiny leaf surface like laurel.

Q. 263. Those leaves were green and nothing wrong with them?

A. No sir, nothing wrong that I know of.

Q. 264. They show up light?

A. Yes sir, the light is reflected from them.

Q. 265. Now in No. 15 there are some bushes in the foreground on which the leaves show light they were green also were they not?

A. Yes sir, those were,—I think that is some kind the same kind we had before, I don't think it is laurel.

Q. 266. Is that over on the left a young chestnut?

A. No sir, I don't think it is.

Q. 267. You don't know what it is?

A. No sir.

Q. 268. Anyway, they were of nice healthy growth, in good condition?

A. I think they were.

Q. 269. The same is true in No. 16, some light leaves in the front, especially on the left hand side which were green, and show in the picture as light?

A. Yes sir, I think part of this was laurel, that sprig there was.

Q. 270. No. 22, I believe shows the barren surface around in the neighborhood of the furnaces?

A. Yes sir, that was near one of the furnaces.

Q. 271. Was there an earthquake at the time you took that photograph?

A. No, sir, a brainstorm when I went to make the photograph.

Q. 272. What is the cause of that line?

A. I dropped it and broke off a piece.

Q. 273. On this picture No. 5 there appears to be a number of light splotches, not confined to the trees, but it is splotched on the surface of the picture, what caused those light splotches over that picture?

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A. I am unable to see anything on the surface of the photograph, there are no splotches that I *cam* discover.

Q. 274. Did you or not claim, on your examination in chief those places you claim which are light there*m* which appear light on the photograph was caused by some trees you state were dead.

A. Yes sir.

Q. 275. I take it you don't know really if the trees are dead, do you?

A. If I can judge from the appearance of it.

Q. 276. What part of it?

A. The leaves.

Q. 277. Do you know whether or not it is a fact that the leaves die one year and the next year come out perfectly green all over?

A. They may.

Q. 278. So what you mean is from the appearance of the leaves, the leaves were dying?

A. I don't know that the picture shows that those light spaces,——

Q. 279. Don't you know that the picture shows that those light spaces *are* splotches are not confined to any one tree, and just appear to be splotches on the surface of th- picture?

A. Well, they look like trees, defined to me.

Q. 280. Now, as a matter of fact,—this tree here and this tree, here that is a defined tree, these here,—(Indicating). Any number of them are defined, the outline of the tree, but those here seem to cover places of more than one tree and are not confined to the tree, it looks to me like these trees are outlined or defined in the photograph. Now, those leaves were white?

A. Not white no.

Q. 281. What color were they?

A. Very light.

Q. 282. Nearly white?

A. Nearly white.

Q. 283. *R*hey were not yellow?

A. Slightly yellow.

Q. 284. They were not brown?

A. No sir, not brown, I couldn't say they were brown, nearer tan than brown. They were a light tan in color.

485 Q. 285. Tan is about yellow is it not?

A. No sir, I wouldn't call tan yellow.

Q. 286. You don't have any idea what tanned those trees and made them light?

A. No sir, I never saw them before.

Q. 287. You don't know what kind of trees they were?

A. No sir, I couldn't tell what kind each of them were, as well as I remember there was an oak, pine and hickory there, I didn't think

there was any hemlock, but the general variety of trees in the forests.

Q. 288. The hemlock is a different variety of the fir or pine, is it not?

A. Yes sir, I reckon it is.

Q. 289. Maybe those little splotches got on there in the development of the picture, could they have done that?

A. The whole picture got there in developing it.

Q. 290. Maybe they were the result of the development, and not the result of the brown or white or yellow leaves at all?

A. I couldn't tell you.

Redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. I will ask you to state whether or not you used the best and most approved methods of photography in the taking and developing and printing the pictures?

A. I did, to the best of my ability.

Q. 2. Do you know about how many miles you covered on your various trips through this country, approximately?

A. I should say at least seventy-five miles.

Q. 3. In an automobile?

A. Part of the time, and part of the time we had a conveyance drawn by a mule and part of the time we walked.

Q. 4. You were asked about some pictures being snapshots and more time exposure what is the difference in the relative value
486 of a photograph made from instantaneous and time exposure?

A. You get approximately the same results.

Q. 5. What is the reason you use on one occasion a time exposure and on another occasion an instantaneous exposure?

A. If the weather is bright and during the middle of the day the light is very strong and then we make an instantaneous exposure. If it is dark or cloudy and the light is not very strong, in the afternoon or very early in the morning, we take a time exposure.

Q. 6. Do you do that to make the results of the instantaneous exposure on a bright day show approximately the same as a time exposure would show of the same situation on a day when it was not so bright?

A. We do it to get the best results and it usually has that effect, it shows that effect.

Q. 7. In other words, it depends on whether or not it is a sunshiny day, and you get approximately the same results?

A. Yes sir.

Q. 8. Now, the Cramer plates, is that recognized by photographers as a good plate?

A. Yes sir, one of the best.

Q. 9. Is it or not in use generally?

A. Yes sir.

Q. 10. Does it or not give good results?

A. I think it gives the best results is why I use it.

Q. 11. You were asked about color photography and express- *and* -sire to e-plain about it, you may do that now?

A. I have nothing to explain that there is a process by which they can get a yellow plate, develop it in such a manner this yellow, when you look through it, it shows the whole thing yellow, and the- by a mechanical or chemical method you can make a plate which shows red. They have another process by which they can make a plate which shows green. When you talk about color photography, you have seen them as you walk along the street, look through the windows, see a parrot on a tree, and that parrot may have a red tuft on its head, the way it is made,—or it may be
487 a gray parrot with a tuft of red on his head, sitting on a green tree.

Well, you take a plate, of a field with green foliage, and cut out everything but the *bows* of the tree, then you cut — everything about the parrot on another *palte* but the red tuft on his head,——

Q. 12. That is the method,——

By COUNSEL FOR DEFENDANT: Let him go on.

A. Then you cut everything out on the next plate except the balance of the parrot which takes approximately a color photograph. You put them all together. Then you have the red tuft on the parrot head, the green branches in the tree and that is what is called color photography.

Q. 13. You make the colored photograph from a number *or* combined negatives?

A. Yes sir.

Q. 14. Than can be done only by several different exposures?

A. Yes sir, I have never seen anything,—I have never seen anything else done in the way of color photography. I don't know that I know everything about it, but that has been shown and demonstrated to me, and I have been repeated- solicited to invest in those things for my own profit, but I never could see any profit in it.

Q. 15. State whether or not the methods which you use, the process which you use in obtaining photographs which you have attached to your deposition, is regarded as a good method of showing color values, the conditions of things which they purport to portray?

A. Yes sir, the only method.

Q. 16. When you speak of colors, you mean color values as applied to photography?

A. When I speak of colors, red, white and blue, primary blue, when I speak of colors in photography, I mean the gr-dation from black to white, the color values of the picture.

Q. 17. Is this method a valuable one as showing the true color values?

A. Yes sir.

Q. 18. Some photographs which you have introduced *is*
488 shown a haze for instance No. 22 and No. 18, I will ask you to state whether or not you could by any method part,—by over exposure or under exposure of the plate, or on a negative, produce a

haze like there is on part of that picture in there? Or whether the use of over exposure would tone down the entire picture?

A. Over exposure would tone down or make the whole plate the same way, from the skyline on down.

Q. 19. Then where the haze appears on any one of these pictures, does that or not show the true conditions?

A. It shows the relative conditions between the other places and the haze, the true condition *fo* the,——

Q. 20. No. 22, the one you dropped and broke, the upper two-fifths shows to be dead white, is that the way it was taken at first?

A. No sir.

Q. 21. That shows no atmospheric conditions?

A. No sir. This was badly broken, and after we got enough pieces together to show to the horizon, nothing above was put in there to show, I merely masked off this upp- part and it was not printed at all.

Q. 22. You have the horizon line and probably two inches showing atmospheric conditions?

A. That is right.

Q. 23. Did you or not, in taking these pictures, did you attempt to try to change in any way condition- portrayed by them?

A. I*n* did not.

Q. 24. Did you try to reproduce the exact conditions in the field of exposure?

A. I tried as near as possible to get an exact representation of conditions before me.

Q. 25. I believe you stated the color or tone of the whole picture would depend or be determined in whole by over or under exposure, and cannot be determined in part?

A. Not naturally, you can by some process fix a plate and put in anything you want to. You could have put a house up there if you had wanted to.

Q. 26. Did you or not do that in any of the photographs you have introduced here?

A. I did not.

Q. 27. No. 11, about which you were questioned, the leaves in the foreground, what caused the light conditions there?

489 A. Well, I can illustrate,—if you turn it to the light,——

Q. 28. You state these were green leaves?

A. Yes, sir.

Q. 29. What causes them to show up light?

A. Reflection of the light coming down.

Q. 30. Suppose you take the photograph itself and lay it down at a certain angle, they show up lighter than at other times?

A. Yes, sir.

Q. 31. Then it is a question as to how much the leaves show up, it depends on the angle with which the light strikes it?

A. Yes, sir.

Q. 32. Does the photographs which you have been questioned about, where the trees show up light, state whether or not all the

leaves would show up light, here in the foreground, the ones about which Mr. Fowler asked you?

A. Yes, sir, that light field is due to that.

Q. 33. That is there in the foreground?

A. Yes, sir.

Q. 34. Then the light condition in the back ground, you have described, which you say is due to dead and dying leaves, is that from reflection of light the same as here?

A. No, sir.

Q. 35. So that is a different color from the ones which show light here in the foreground?

A. Yes, sir.

Q. 36. Then it is true that photographs will show in the immediate foreground where the angle is different, a light color on dark green leaves, and the back ground will show the leaves up?

A. In that contrast, but never darker than it is. If all those had been the same color, they would all show up the same color.

Q. 37. What sort of trees and bushes are those in No. 2?

A. Mostly persimmons.

Q. 38. Would you call that a healthy forest?

A. No, sir.

Q. 39. Now, all these photographs here which Gen. Fowler asked you about, and the dead trees through there, and whether or not there was a dead tree here and yonder, state what was the general conditions?

A. Well, there is a general condition of dead trees, more in some places than others.

Q. 40. Was the dead trees, one dead tree here and another
490 half a mile away or something like that?

A. No, sir.

Q. 41. You cannot undertake to enumerate every dead tree you saw?

A. No, sir.

Q. 42. Will or not white smoke emitted from the copper company's stacks, or o- the Ducktown Company show like a haze in a photograph?

A. Yes, sir.

Q. 43. That is what is shown in this photograph?

A. Yes, sir, shown in most of them.

Q. 44. Where you testify about the haze?

A. Yes, sir.

Q. 45. No. 21, I believe you say you saw the stack of the Ducktown Company at the point from which you took the photograph?

A. No, sir, I did not.

Q. 46. State whether or not that white blurr to the right is smoke from their stack?

A. I couldn't tell positively, but I think it is.

Q. 47. You can then see it above the buildings, where you cannot see the stack?

A. Yes, sir.

Q. 48. Do you know from your own knowledge whether those are stacks here, (indicating). Did you count them?
A. Did I count them—I think there are six or seven.
Q. 49. Did they all emit smoke?
A. Yes, sir, most of them.

Recross-examination.

By Counsel for Defendant:

Q. 1. I wish you would look at No. 15, and state whether or not there are quite a number of trees which show up white in the foreground?
A. Yes, sir, there are.
Q. 2. Those leaves, I understand, are green?
A. They were green, nearly all of them.
Q. 3. Intermingled with the- are many leaves showing up dark?
A. Yes, sir.
Q. 4. They were also green?
A. Yes, sir, different variety, it seems.
Q. 5. Were there not many trees exactly the same color and some show up light and some dark?
A. Yes, sir.
491 Q. 6. Now, I wish you would look at that tree, which is near the foreground, (indicating) what kind of tree is that?
A. I think that is a hemlock.
Q. 7. That was green?
A. Yes, sir.
Q. 8. Some of those leaves are dark and some light?
A. Not of the same tree.
Q. 9. Look at the same tree and see if that is not true, look at the leaves on the left hand side in the light, and the right hand side dark?
A. Yes, sir, but that is not a hemlock, I find.
Q. 10. What is it?
A. That is a tree with broad leaves, I don't know what it is, I don't remember.
Q. 11. Now look at the left hand side of that photograph along up on the mountain side, some of the leaves look light and some look black?
A. Yes, sir.
Q. 12. All of those leaves were green, were they not?
A. I cannot say that, because there were some of those dead and dying they show that way.
Q. 13. Don't you know that some of those leaves back in there would show up light and were perfectly green?
A. No, sir, I do not.
Q. 14. Will you swear that the trees back in here that shows up light were dead?
A. No, sir, I will not swear as to them, because it is a broad leaf, shiny leaf, and that reflects the light at certain angles, whether in the back ground or foreground?

Q. 15. Now, when looking at the extreme right, that shows up lighter than on the left?

A. Yes, sir.

Q. 16. That is because there is more light on that side of the mountain?

A. No, not so much, but because the smoke between this ridge and that ridge, that ridge is some distance beyond this one.

Q. 17. Take No. 10, the whole back ground of that picture is light?

A. Yes, sir.

Q. 18. All those leaves over there were green?

A. Not all of them.

49? Q. 19. Ninety-nine one-hundredths of them were green?

A. No, you cannot make that comparison that high.

Q. 20. The great amount of them were green?

A. Yes, sir, a majority of them.

Q. 21. They all show light?

A. The whole thing shows light on a kind of hazy condition.

Q. 22. All that whole timber in that section shows light?

A. Yes, sir.

Q. 23. Then the conditons in the foreground, a great many of them shows light and a great many shows dark?

A. Yes, sir.

Q. 24. But all of them were green?

A. Nearly all of them.

Q. 25. Now, take No. 12 on the right hand side of this photograph, there are many leaves which show light and many of them show dark?

A. Yes, sir.

Q. 26. All of those leaves were green?

A. No, sir.

Q. 27. Don't you know as a matter of fact in that part of the photograph every one of those leaves were green?

A. No, sir, I don't know that.

Q. 28. You say that a great many leaves show light which were green?

A. Yes, sir.

Q. 29. Now, in regard to that smoke drifting up the valley there, do you know whether that is smoke or fog?

A. I couldn't tell you.

Q. 30. As a matter of fact, that smoke looks like fog?

A. When drifting that way.

Q. 31. You were speaksing about color photography, how long would it take to make a picture of a parrot the way you described it?

A. In that way I described?

Q. 32. Yes, sir.

A. It would take three or four times as long as by taming a photograph.

Q. 33. If you should scrape off each plate in the way you stated, it would take a whole day to take a photograph of a parrot?

A. Might- near a dau, matching it.

Q. 34. Then to go into a garden and take a garden with contains a number of flowers and show the colors of the flowers,
493 it would be almost impossible to match it?

A. It would be so near impossible that a man would have to work weeks and months to get a picture that way.

Q. 35. Then if there has been filed in this case, fifty or one hundred photographs showing the coloring of all the flowers and vegetables in gardens, that fellow must have worked a hundred years?

A. I suppose so, if he made it by photography.

Re-redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. Does or not the sun strike on all leaves at the same angle?

A. No.

Q. 2. Is that why some will show up light and some dark?

A. Yes, sir.

Q. 3. Will or not they show up to a greater extent in the foreground than in the distance?

A. Of course, anything near to you shows plainer to you than anything in the distance.

Q. 4. In photograph No. 10 where the whole mountain side in the back ground shows light, what is that due to, is it due to the reflection of light on the leaves?

A. No, sir.

Q. 5. What is it due to?

A. Smoke between the place where the photograph was made and the mountain.

Q. 6. Did you or not see the dead trees which the photograph discloses as being present?

A. I saw them.

Q. 7. Were they correctly shown?

A. Yes, sir as near as an instrument will make them.

Re-recross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. You mean to say you have an independent recollection of the location of every tree which had dead leaves on it?

A. No, sir.

494 Q. 2. So then you are swearing about the location shown you are just guessing the trees which you have sworn to and appears in the photographs as the trees which you think you saw, that is what you are swearing to, is it not?

A. Yes, sir, as nearly as a correct photograph can be made, I couldn't locate the trees, I would not know where they were. I wouldn't know where each one was located, but it shows for itself in the photograph.

Q. 3. That is, you think it does?

A. I think it does.

Re-re-redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. What do you base your opinion on? On your experience in photography?
A. Yes, sir.

Re-re-cross-examination

By COUNSEL FOR DEFENDANT:

Q. 1. Did you ever go and try to take photographs of dead trees before?
A. Not on so large a scale. I have made them before.

(This witness traveled 198 miles in coming to Blue Ridge and returning home.)

The next witness, ALBERT E. SHARPE, having been recalled by counsel for plaintiff, testified as follows:

Direct examination:

495 By COUNSEL FOR PLAINTIFF:

Q. 1. Were you with Mr. Adams, the gentleman who has just left the stand at the time he took these photographs?
A. Yes sir.
Q. 2. Are you familiar with this section of the country up here?
A. Reasonably so.
Q. 3. How long have you been living here?
A. I have been living down in the adjoining county all my life, forty seven years.
Q. 4. This photograph No. 1, can you state in what direction from the plant you were, what direction from the plant that was taken, and how far?
A. It was taken south——
Q. 5. Did you hear the statements made by Mr. Adams as to the distances and locations at which they were taken?
A. I heard his testimony and all he said about it.
Q. 6. Were or not those locations and statements correct?
A. I think they were.
By COUNSEL FOR DEFENDANT: You gave him the information?
A. No sir, I did not.
Q. 7. Did you state where each point was at the time he took the photographs?
A. Not all the time, I was with him part of the time, when some of the photographs were taken, Mr. Vestal taken the places more than I did.
Q. 8. But you heard his statements and you say they are correct?
A. Yes sir.

Cross-examination:

Stand aside.

(Thereupon the further taking of testimony is adjourned
496 until tomorrow morning, August 21st, 1914, at 8 o'clock A. M.)

The next witness, FRANK E. SHIPPEN, having first been duly sworn, deposed as follows:

Direct examination.

By Mr. HILL:

Q. 1. How old are you?
A. Forty seven years old.
Q. 2. Where do you live?
A. I live in Ellijay, Gilmer County, Georgia.
Q. 3. How long have you lived there?
A. I have lived there very near seventeen years.
Q. 4. What business are you engaged in?
A. The manufactur- of lumber.
Q. 5. How long have you been engaged in the lumber and timber business?
A. Since January 1889.
Q. 6. Have you been associated with your brother, W. H. Shippen?
A. Yes sir.
Q. 7. Are you connected with the Shippen Brothers Lumber Company?
A. Yes sir.
Q. 8. In what capacity?
A. Vice President.
Q. 9. That is a corporation, in which you are a stockholder?
A. Yes sir, incorporated under the laws of the State of Georgia.
Q. 10. In what other sections of the country have you been engaged in business?
A. We first started in January 1889 in Pennsylvania, we were there nearly six years. We manufactured lumber there. Then we cut out our holdings there and came to Louisville, Kentucky, and ran the lumber business and sawmill and planing mill there.
Q. 11. What induced you to come to Georgia?
A. Why, we didn't like the retail business very well there at Louisville, and thought there was a better opening, and my oldest brother came south and spent about six months here, and in
497 East Tennessee and Western North Carolina, and Gilmer and Fannin County, and Murray County, Georgia, and we located here, bought the property about nineteen years ago.
Q. 12. Did you yourself make an inspection of this country?
A. Yes sir, I did before we bought.
Q. 13. How did you regard it as a section for timber business?
A. I regarded it as a good section. We bought it during the

years of the panic, bought in January, the latter part of January and the 1st of February 1895. They had a very bad panic in Louisville.

Q. 14. You bought the lands then at a good price?

A. Yes sir, bought them at a bargain.

Q. 15. Was that before the Ducktown Copper Company and Tennessee Copper Company had enlarged their operations?

A. Why, I think the Ducktown smelter was running, but smaller operations at that time, than what they are running to-day. The Tennessee Copper Company was not in business.

Q. 16. What method did the Ducktown Copper Company use in roasting its ores?

A. They were roasting on the ground, open heap roasting, put wood under it and set it on fire and roasted the sulphur out.

Q. 17. What is known as the open heap method?

A. Yes sir.

Q. 18. To what extent was the country over in North Georgia affected by smoke at that time?

A. I saw no effect in North Georgia at that time.

Q. 19. Did you inspect the forests at that time with a view to purchasing?

A. Yes sir.

Q. 20. What is the condition of the forests in North Georgia now?

A. They are in a sickly and unhealthy condition, indeed. Dead and dying and condition in spots.

Q. 21. Compared with other forests which you have visited, what is their condition?

A. Well, it is a very badly damaged, dead and dying condition, the timber is damaged very badly.

Q. 22. Are you engaged in farming to any extent, do you have any crops at all?

A. Yes sir.

Q. 23. Have you inspected crops through this section of the country?

498 A. Yes sir. Not in Fannin County so much as I have in Gilmer County.

Q. 24. What is their condition?

A. Why, three years ago, I saw a bottom of corn in the river bottom there at Ellijay that I passed four times a day going from home to work and coming back, and that was injured, the greater part of it, the latter part of—I think it was the 30th day of September, or the first four or five days in October, the fodder and corn—replanting, the season was rather wet and we didn't get the corn in early, we didn't get the ground broken up until about the 1st of July and—until about the first of June and the corn was planted the first week in June, and the whole thing there was about a failure.

Q. 25. Have you or not seen smoke in that section?

A. Yes sir, I have seen it and smelled it. And made a record of this year. I have the record here.

Q. 26. Have you been around the Ducktown plant?

A. Yes sir.

Q. 27. State whether or not it is the same smoke in color and odor that comes from that section that you have seen and smelled there?

A. Yes sir, the same stuff.

Q. 28. Did you have occasion to examine the timber and crops shortly after the smoke came over?

A. Yes sir.

Q. 29. What would be the condition after such visitation?

A. The leaves would curl up and have brown spots on them and the corn blades, they will turn white and bleach out, and I have some samples here that I want to file of corn taken there from my own farm at Ellijay, that I passed four or five times a day.

Q. 30. What is the condition of the farms and timber and orchards this year?

A. It is in an unhealthy condition.

Q. 31. What were the conditions last year?

A. It has been in an unhealthy condition for five or six years.

Q. 32. I believe you say you have made a record of the dates this year that smoke has settled down on you?

A. Yes sir.

Q. 34. Give us those dates?

499 A. I might say that I live in Ellijay, within the corporate limits of the town, I live on a hill about two hundred and fifty feet higher than the town of Ellijay, and my front porch faces the north, and all of the Ellijay river valley and Flat Top Mountain and Bushy Head Mountain are in plain view of my house and front porch. By going two hundred and fifty feet to my brother's house I can look east and see all of the west end of Turniptown Mountain, and I can see the Arnold and Northcutt Mountains, where there are large peach and apple orchards. Now, on May 1st, the smoke was all over Turniptown Mountains, Flat Top Mountain and Bushy Head Mountain from 7:30 A. M. to 2:00 P. M., the air was out of the north.

On May 2nd, the smoke was all over Turniptown Mountain, Flat Top and Bushy Head Mountain from 7:00 A. M. to 3:00 P. M.

On May 8th, the smoke was all over the Ellijay River valley north of Ellijay and on Turniptown Mountain from 7.00 A. M. to 2:30 P. M.

On May 11th, the smoke was all over Turniptown Mountain Flat Top and Bushy Head Mountains from 6:30 A. M. to 4:00 P. M.

On May 13th, the smoke was all over the Ellijay River valley and Turniptown Mountain.

On May 14th the smoke was all over Flat Top and Bushy Head Mountains and Turniptown Mountains, the air was out of the north, from 6:30 A. M., to 12:30 P. M.

On May 16th, the smoke was all over Flat Top and Bushy Head Mountain and Turniptown Mountain.

On May 18th, the smoke was all over Flat Top and Bushy Head and Turniptown Mountains from 11:30 A. M. to 1:30 P. M.

On May 25th, smoke was all over Flat Top and Bushy head Mountain and Turniptown Mountain.

On May 26th, the smoke was all over Flat Top and Bushy Head and Turniptown Mountains.

On May 28th, the smoke was all over the Ellijay River valley and north of Ellijay and east from Turniptown Mountain.

500 On May 29th, the smoke was very strong in the Ellijay River valley and on the mountains north and east of Ellijay from 6:30 A. M. to 4:30 P. M.

On May 30th, the smoke was all over the Ellijay River valley strong, and on the mountains north and east of Ellijay.

On May 31st, the smoke was all over the Ellijay River Valley and the mountains north and east of Ellijay.

On June 1st, the smoke was all over the Ellijay River valley on the mountains north and east from 7:00 A. M. to 4:00 P. M.

On June 5th the smoke was all over the Ellijay River valley from 7:00 A. M. to 1:00 P. M.

On June 8th, the smoke was strong all over the Ellijay River valley, and Turniptown mountain from 7:30 A. M. to 4:30 P. M.

On June 9th the smoke was all over the Flat Top Mountains and Ellijay River valley and Turniptown Mountains from 6:30 A. M. to 12:00 P. M.

On June 10th, the smoke was strong all in the Ellijay River valley from 6:30 A. M. to 2:30 P. M., and all over Flat Top and Bushy Head and Turniptown Mountains.

On June 11th, the smoke was all over Turniptown Mountain, Flat Top Mountain and Bushy Head Mountain from 6 A. M. to 12 M. and all over the Ellijay River valley.

On June 12th, the smoke was strong and all over Flat Top and Bushy Head Mountains from 7:00 A. M. to 12:30 P. M.

On June 13th, the smoke was strong all over the Turniptown Mountain and Flat Top and Bushy Head Mountain and Ellijay River valley from 7:30 A. M. to 3:30 P. M.

One June 17th the smoke was all over the Turniptown and Flat Top and Bushy Head Mountain from 7 A. M. to 3 P. M.

One June 18th, the smoke was strong all over Turniptown and Flat Top and Bushy Head Mountains and Ellijay River valley from 7 A. M. to 11:30 A. M.

501 On June 20th, the smoke was all over the Flat Top and Bushy Head Mountain and Turniptown Mountain and Ellijay River Valley from 7 A. M. to 3:20 P. M.

On June 21st the smoke was strong all over the Ellijay River valley and Flat Top and Bushy Head Mountain from 7 A. M. to 6 P. M., smelled the smoke.

On June 22nd, the smoke was strong all over Flat Top, Bushy Head and Turniptown Mountains and remained from 6:30 A. M. to 7 P. M.

On July 3rd, the smoke was all over Flat Top, and Bushy Head and Turniptown Mountains from 7 A. M. to 4:30 P. M.

On July 5th, the smoke was all over Flat Top and Turniptown and Bushy Head Mountains, smoke strong.

On July 12th, the smoke was all over the Ellijay River Valley strong from 7 A. M. to 6:30 P. M. and over the Turniptown and Flat Top and Bushy Head Mountain.

On July 13th, the smoke was strong all over the Ellijay River Valley and the mountains north and east from 6:30 A. M. to 6:30 P. M.

On July 18th, the smoke was all over Flat Top and Bushy Head and Ellijay River valley.

On July 19th the smoke was all over Flat Top and Bushy Head and Turniptown Mountain.

On July 20th, the smoke was over the Flat Top and Bushy Head Mountains and Turniptown Mountain and Ellijay River valley.

On July 21st, the smoke was on Flat Top and Bushy Head and Turniptown Mountains.

On July 23rd, the smoke was all over Flat Top and Bushy Head and Turniptown Mountain from 6:30 A. M. to 1 P. M.

On July 24th the smoke was all over Flat Top and Bushy Head Mountains from 9:30 A. M. to 6:30 P. M.

On July 27th, the smoke was all over the Ellijay River valley and Flat Top and Turniptown Mountains all morning, I
502 went up to the Arnold Orchard in the afternoon. It was strong there on the mountains north and north west of there. I left the mountain at 5:15 P. M. and it was still smoky. I smelled the smoke three times on the mountain. Mr. Clarke, Mr. Sharp, W. H. Shippen and F. M. Shippen and Mr. Henson were in the party.

On July 28th the smoke was on Turniptown Mountain, Flat Top Mountain from 7 A. M. to 2 P. M.

On July 29th, the smoke was on Flat Top Mountain from 7 A. M. to 6:30 P. M. I went up to the Arnold Mountain and reached there about 2 P. M. and about 5:45 P. M. and the smoke was all over the mountains northwest of the Arnold Orchard.

On July 30th, the smoke was all over the Turniptown mountain and Flat Top Mountain and this Arnold Mountain from 6:30 A. M. to 6:30 P. M.

On July 31st, the smoke was over the Turniptown Mountain, Flat Top Mountain from 6 A. M. to 5 P. M. The smoke was strong.

On August 1st, the smokes was all over Turniptown and Flat Top Mountains from 6 A. M. to 6:20 P. M.; and from 1 P. M. to 6:20 P. M. the smoke was all over the Ellijay River valley.

On August 2nd, the smoke was on Turniptown and Flat Top Mountains from 7 A. M. to 4 P. M.

On August 3rd, the smoke was on Flat Top and Turniptown Mountains from 6:30 A. M. to 5 P. M.

On August 4th, on Barnes Mountain about nine miles southwest of the Ducktown Copper Company's plant, I could see their acid plant and tank, and at 3.25 P. M. could see the smoke rising up from their plant and going southeast reaching into Fannin County, Georgia, a larger volume of smoke than I saw from the Tennessee Copper Company's plant.

On August 5th, on Lots 91, 9th District and Second Section of

Fannin County, Georgia, at 2:45 P. M. I saw the plant of the Ducktown Copper Company, and a larger volume of smoke was coming from their plant and going southwest into Georgia.

On August 6th, from Lot 24, 9th District and Second Section, on Granny Marr Mountain, I could see all north and east of the plant at Ducktown about six miles away at 9.30 A. M. The smoke was on Flat Top Mountain in Gilmer County, Georgia. I could see the Ducktown plant and their acid works, from between Lots 21 and 22, 9th District and Second Section on the road leading from John Pelfreys to the Burnt Mountain Storehouse, at 4 P. M. and 4:15 P. M. could see the Ducktown Company's acid plant from the Burnt Mountain Storehouse about three and one half miles away, southwest from there, and there was a larger volume of smoke going west against Big Frog Mountain and then into Georgia.

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Q. 35. You say this smoke was a larger volume than what?

A. Than that coming from the Tennessee Copper Company's plant. On August 7th, I was on a hill near Hopewell Church house about 6:45 A. M. and the smoke was coming from the Ducktown Company's plant in larger volume than from the other plant and was going southeast into Georgia. I smelled the smoke on a little hill southeast of the Ducktown plant, was very strong. That is, I expect about a quarter of a mile away and it was going into Georgia southwest at 8.35 A. M. on the morning of August 7th.

On August 15th, on the train at 12:45 P. M. just north of Cherrylog, Georgia, the smoke was all over the mountains, especially over Big Ball and Little Ball and Cole Mountain and Flat Top and Turniptown Mountain. I noticed again at 5:45 P. M. the smoke was still north and east of Ellijay.

Q. 36. Was that last Saturday?

A. Yes sir, when leaving here.

Q. 37. When you were going from here back to Ellijay?

A. Yes sir. On August 16th, there was sulphur smoke all over the Flat Top and Bushy Head and Turniptown Mountain from 8 A. M.

Q. 38. Did you keep that record yourself?

A. Yes sir, I made it daily.

Q. 39. It was made from your own observation?

A. Yes sir.

Q. 40. Now, was that smoke or not similar in appearance and odor to the smoke you have noticed around the plants of the copper companies?

A. Yes sir. And while I was up there around the plant on the morning of the 7th, it made me cough, and it irritated my throat and hurt my eyes.

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Q. 41. That was on the morning of the 7th of August?

A. Yes sir, and I might say further that when I saw that on the morning of August 7th, I got on top of a hill in Georgia and looked down and saw the smoke coming out, and I have seen it several mornings, and it is denser to me and there is more of that smoke in there in the morning than in the afternoon, in that valley,

and I cannot account for it any other way than they run their acid plants in the day time and let the smoke loose in the *daytime and let the smoke loose in the* night time.

By COUNSEL FOR DEFENDANT: Do you know whether they do that or not?

A. That is my observation of it, I know it is always stronger in the morning at Ellijay than at any other time—I know that.

Q. 42. During the times you have mentioned from that memorandum there,——

A. I have seen it other times when it wasn't so dense and thick and strong, and then I have seen it other times at home there where I could smell it strong.

Q. 43. During the times you have mentioned, since the 1st of May, have you observed the forests and fields through there?

A. Yes sir, on our trees and crops.

Q. 44. Describe that?

A. After that smoke comes and settles in there, the leaves will be parched up and burned up and kind of curl up, will not look natural on the trees or limbs, and they will curl up and be burned and spots will come all through them.

Q. 45. Does that have any effect on the growth of the tree?

A. Yes sir. I have some samples that I have cut off of some oaks, white pine and poplar.

Q. 46. Does that have any effect on the market value of the timber?

A. Well, it decreases the growth materially and the timber does not increase in growth like it would otherwise, like it has
505 seven or eight years before, the last six or seven years the timber will show for itself, and years before that, it will show for itself.

Q. 47. Does it have effect on the forests generally?

A. Yes sir, the forests does not look to be in the condition it was twelve or thirteen years ago, or eighteen years ago, when we first looked this property over in North Georgia before we bought it.

Q. 48. Now, did you keep any record for last year?

A. No sir.

Q. 49. How was the condtion, as you recall it last year?

A. Last year we had a great deal of smoke, but our injury this year was earlier than I ever saw it before. There was serious injury there in June.

Q. 50. You say that it is earlier this year than you ever noticed it before?

A. Yes sir.

Q. 51. Than it has been up to the present time?

A. Yes sir. Generally, it has been in August and September, where I have noticed a great deal of injury.

Q. 52. As compared to last year, is the injury greater or less?

A. It is greater this year than last year.

Q. 53. The year before that, was it greater or less?

A. 1912 was bad year with us, a great deal,—I never saw corn affected down there as bad as I did in the year 1912.

Q. 54. You state you have some sections cut from trees?

A. Yes sir.

Q. 55. I will ask you to produce them and introduce them as Exhibits to your deposition? The section which I hand you now, describe that and introduce it as Exhibit No. 1 to your deposition?

A. That is a section of a spanish oak tree, it shows for the last several years the growth has been affected. In here it shows that it had a regular growth until it gets out to here (Indicating).

Q. 56. Did you cut that?

A. Yes sir, I had it cut.

Q. 57. And were you present?

A. Yes sir, and I file that as Exhibit No. 1 to my deposition.

Q. 58. I hand you section from a tree which I will ask you
506 to introduce as Exhibit No. 2 to your deposition?

A. Yes sir.

Q. 59. State what sort of tree that is?

A. That is a spanish oak.

Q. 60. You saw that cut?

A. Yes sir, you can look there and see what condition it is in, and you can look out there and see what it is doing now.

Q. 61. I hand you section from a tree and ask you to Exhibit as Exhibit No. 3, and state whether or not that was cut,——

A. That is a yellow poplar and was cut from logs on our yard which came from Lucas Switch, north of Cherrylog.

Q. 62. In Gilmer County?

A. Yes sir.

Q. 63. About how far from the plant of the Ducktown Copper Company?

A. Twelve or thirteen miles air line.

Q. 64. Did you see that cut?

A. Yes sir.

Q. 65. I hand you a section and ask you to Exhibit it as Exhibit No. 4 to your deposition?

A. Yes sir, this is a piece of white pine.

Q. 66. Did you see that cut?

A. Yes sir, that came from the same place.

Q. 67. I hand you another section and ask you to file it as Exhibit No. 5 to your deposition?

A. This is a black oak.

Q. 68. Did you see that cut?

A. Yes sir, this black oak and spanish oak and white pine timber is from the same place and is very susceptible to smelter fumes, some of the first timber that is killed.

Q. 69. Where did that come from? Just north of Cherrylog?

A. Yes sir, in Gilmer County, Georgia.

Q. 70. About the same distance from the plant?

A. Yes sir.

Q. 71. Did you see that cut?

A. Yes sir.

Q. 72. You were with Mr. Vestal and his son and Mr. Adams and Mr. Sharp when they took these pictures or photographs?

A. Yes sir, I left Ellijay on the night train of August 2nd and come to Blue Ridge.

Q. 73. Have you examined these photographs since they were taken?

A. I looked at them a few minutes at the hotel this afternoon.

Q. 74. Do they or not correctly portray the conditions as
507 you saw them at the time they were taken?

A. Yes sir.

Q. 75. Now, on this trip, did you or not notice the dead leaves?

A. Yes sir,—you mean from the effect of smoke, the down leaves on the trees?

Q. 76. Yes sir,

A. Yes sir.

Q. 77. Did you see any on the ground?

A. Yes sir, in places I saw leaves that come out in the Spring on the ground, falling from the trees.

Q. 78. Was the number of dead trees small or large?

A. Right large.

Q. 79. Is this the season of the year when leaves should fall?

A. I never saw them fall before the last seven or eight years in this way. We generally have frost in North Georgia from the month of October, anywhere from the month of October to the first week in November, that is frosts that will kill forest leaves.

Q. 80. You say that the number of leaves you saw were large—about how many, if you know?

A. Well, I saw them in various places, I saw quite a number on Barnes Mountain and on Granny Marr Mountain or Knob.

Q. 81. Now, on Barnes mountain, can you estimate,—Can you see the stack of the Ducktown Copper Company from there?

A. Well, from where I was, I was there two different days, I was there on,—Let's see,—(Looking at book) I think on the 4th and 5th of August, and I could see their acid plant, and see it setting up there, what I took to be the back end, and what I took to be their acid plant. Two buildings there, between where their smoke stack comes up, the brick building there. I never was in the plant, but back of the smoke stack there is a five or six story red brick building, then back of it, was what I took to be the acid plant. Now, this building was painted white, and I could see the water tank out there. I don't know whether I saw the smoke stack or not, I hardly think I did, from the point I was.

Q. 82. Was it from that point you observed the smoke?

A. I saw the smoke coming from the plant and going into Georgia.

Q. 83. You didn't see the stack?

A. I don't think so.

Q. 84. But you did see the smoke?

508 A. Yes sir, I saw the smoke coming up and could see the water tank.

Q. 85. Was it rising above the tank?

A. Yes sir, up in the air quite a way.

Q. 86. You noticed from Granny Marr Mountain and from other points?

A. I saw it from Granny Marr Mountain and I saw it on the road leading from Mr. John Pelfrey's, and saw it on,—I saw the plant from the Hopewell Church house, and from near the Burnt Store Church. I saw it from sever-l places.

Q. 87. On that trip to Barnes Mountain, did you examine the timber there?

A. Yes sir.

Q. 88. Did you notice the condition of it?

A. Yes sir.

Q. 89. To what extent was that damaged?

A. Why, the oak timber was the principal timber on that mountain, I would say that there was dead and damaged timber which I don't think will put out again, from looking at it, I would think something like forty per cent of the oak timber on that mountain will never put out again. I saw it there at Mr. Barnes' house and went up from there. I cannot tell you how long we were on that mountain, but I know what time the photographs were taken and then hour,—Let's see,—(Looking at Book) The first photograph was taken at 3:10 P. M. that is Photograph No. 6, the first on Barnes Mountain? No. 7 was taken at 3:40 P. M. and No. 8 *and* 4:20 P. M. and No. 9 at 5.20 P. M.

Q. 90. What was the appearance of the leaves on the trees there?

A. They were very brown, some of them were hanging on and a great many were on the ground.

Q. 91. Did they have the same appearance or not? that the leaves of the trees in Ellijay and around in Gilmer County had?

A. No sir. Not out of the smoke zone?

Q. 92. I mean in the smoke zone, in that section of the country?

A. Oh, well, there are places out there along the road about the Northcutt orchard where there is spots browned up, but not as badly as this up here.

509 Q. 93. This is worse here than there?

A. Yes sir.

Q. 94. State whether or not it is worse or less as you go away from the plant?

A. As you go toward the plant it is worse and as you go away in some directions, it is generally better, but some places where it reaches out a long ways.

Q. 95. But as to the appearance of the individual leaf, do they appear the same?

A. Yes sir, the same on Barnes Mountain as down in my section.

Q. 96. Did you go over toward Jack River and in that section?

A. Yes sir, we did on August 6th.

Q. 97. What were the conditions there then?

A. Why, the conditions were very bad as to the white pine and hemlock timber there in places, we went across Barnes mountain

and went across the river and went down the river I guess a mile or a mile and a quarter.

Q. 98. Have you been on Tumblin Creek and in that section?

A. Yes sir.

Q. 99. Have you abserved conditions there?

A. Yes sir.

Q. 100. What were they there?

A. Well, we taken some views over there, several views, I have it down here, let's see,—Tumblin Creek,—Nos. 15, 16 and 17, three taken on Tumblin Creek.

Q. 101. Were the conditions good or bad?

A. The conditions were bad, the white pine and hemlock timber, a great deal was dea-, and a great deal had just recently died. I examined the trees to see whether or not there had been any fire through any of the woods.

Q. 102. Have you examined the forests through this section to see if there is or not any disease of the trees or any,——

A. None that I know of, I never studied forestry.

Q. 103. But from your experience as a timber man?

A. From what I have noticed, I cannot see any cause the trees though die different from any country I have ever been in, that is they commence to die right in the top, the topmost branches and die back for a year, and the next year they come down a little
510 further on the tree, three or four years, and it fails to put out and they are dead.

Q. 104. Do you have or not any great forest fires in this section which burns up the timber?

A. No sir, but I have seen forest fires in Pennsylvania, thousands of acres burned over and have seen lives lost in our neighborhood. I didn't just see it, but was there after the forest fire went through. We had some forest fires on our lands in Pennsylvania that would burn the trees and kill them, some of the trees were burned down, where there was brush and stuff around them.

Q. 105. Do you have such fires here?

A. No sir.

Q. 106. Did you ever see one?

A. No sir. I have seen the leaves burn, run along on the ground. In Pennsylvania we had twenty five thousand feet of hemlock timber to the acre, and in cutting donw then timber we would have a great deal of limbs abd tops and after it would lay there a year or so with the leaves and then let a fire go through it there was so much stuff to burn, but in this country, here, if we get six or seven thousand feet to the acre, we think we have got a good average from this hardwood timber. Where we had twenty five thousand feet to the acre there in Pennsylvania, and we do not have any fires here like we had there. Then we have more water courses here than in Pennsylvania.

Q. 107. What effect does water courses have?

A. It stops the fire, they can't cross, that is where the creeks are twenty to thirty feet wide, it has the effect of checking the fire.

Q. 108. When were the sections which you have tendered this afternoon and introduced as Exhibits when were they cut?

A. Do you mean when were those taken off the logs?

Q. 109. Yes sir, those five pieces, were they cut this year?

A. Yes sir, cut last Monday was a week ago.

Q. 110. I hand you a piece of wood and ask you to introduce it as Exhibit No. 6?

A. Yes sir, this is a piece of white pine timber I have had at the office for ten years, showing the growth.

511 Q. 111. Do you know where that was cut from?

A. Yes sir.

Q. 112. When was it?

A. Ten years ago, and this is a piece of white pine that shows eighteen inches of growth in nineteen years.

Q. 113. I hand you a piece of wood which I will ask you to introduce as Exhibit No. 7 and state what it is?

A. This is a piece of poplar that has been cut ten years.

Q. 114. Where was No. 6 cut from?

A. There at the band mill at Ellijay.

Q. 115. From about the same place as your first Exhibit was cut?

A. In that vicinity.

Q. 116. Where was this cut?

A. In the vicinity of Ellijay.

Q. 117. From the same locality?

A. Yes sir.

Q. 118. I hand you a small piece of wood which I will ask you to Exhibit as No. 8 to your deposition and state what it is?

A. Here is a small piece of spanish oak which has been cut, showing the growth.

Q. 119. Where was that cut?

A. At Ellijay.

Q. 120. I hand you three blades of corn, which I will ask you to Exhibit as Exhibit No. 9*m* to your testimony and state what that is?

A. This was cut off of the corn on June 26th of this year at Ellijay, that is out of my own garden. I saw the smoke in there two or three days before was cut, strong, I passed by it four times a day going from my house to the office.

Q. 121. What effect did you notice the smoke having on it?

A. I noticed the smoke in there and I noticed it all turning white.

Q. 122. How many days after you saw the smoke in there before you got these blades off?

A. I got them about three days after. Here is some corn on which it shows this down here,——

Q. 123. Was it in this condition when you cut it?

A. Yes sir, it has been dry and no water or dampness got to this to turn it white.

Q. 124. Now, coming back to the trip you made, were you on Granny Marr Mountain?

A. Yes sir.

512 Q. 125. What was the condition of the forests there?

A. On Thursday the 6th of August.

Q. 126. To what extent was the timber damaged there?

A. Why, on certain oaks, what we call spanish oak, some call it scarlet oak, and black oak, thirty five per cent of the timber was dead, badly damaged and dying. I saw no fire injury to this timber. We climbed up the mountain and went on near to the top and then we went down and to another top and then over it and went over in the Tumblin Creek Country, if I remember right, I have it down here, where those Photographs were taken, and I know the route we took. Yes, we went on Granny Marr Knob and crossed it and went on Tumblin Creek and went down Tumblin Creek quite a ways.

Q. 127. That was the trip you described this afternoon?

A. Yes sir, that was on Thursday the 6th of August.

Cross-examination.

By Mr. FOWLER:

Q. 1. Mr. Shippen, you are the Vice President of the Shippen Brothers Lumber Company?

A. Yes sir.

Q. 2. How long have you been connected with that company?

A. Ever since it was organized in 1903, Shippen Brothers first, and in June 1903 it was incorporated.

Q. 3. Have you been living in Gilmer County, Georgia ever since that time?

A. No sir, I went there seventeen years ago, and have been there ever since.

Q. 4. Before that, how did you happen to go there?

A. We looked over the timber, my oldest brother looked over the timber, and we sent a man from C. C. Mingle, Jr., & Brother, a cruiser, and then we had his report. He was down here some two months, and my brother Will and I came down and spent about three weeks and went over the land he gave us a report on and then we bought it.

513 Q. 5. When was that?

A. That cruiser was here in October and November of 1894.

Q. 6. Did you buy the land then?

A. Yes sir.—Not then, we bought in February following, in 1895.

Q. 7. And you have been buying lands ever since?

A. The Lumber Company has not bought any land I think,—1905 I think was the last, thirty thousand acres. We may have bought about four or five hundred acres during the last nine years.

Q. 8. Anyway, in 1905, you bought thirty thousand acres?

A. Yes sir.

Q. 9. No damage being done at that time?

A. Some, yes sir.

Q. 10. But, yet, you bought the land, thirty thousand acres at that time, where was it?

A. A great portion of it was in Gilmer County, some was in Fannin County and some was in Murray County.

Q. 11. That was just before the Tennessee Copper Company raised its high stack?

A. We bought this in May 1905, I don't know just when they raised their stack, I know there was a suit brought and then it was dismissed without prejudice.

Q. 12. I am not asking you about suits.

A. I am telling you what I know about it, I don't know just exactly when they raised their stack.

Q. 13. Anyway, no damage of consequence was being done when you bought that thirty thousand acres of land?

A. Not in Gilmer County, no sir. It hadn't reached that far down.

Q. 14. It didn't reach there until after the Tennessee Copper Company constructed the high stack?

A. I don't know when they constructed it, but as soon as they commenced to smelt the ores green and put it all in one body, then it commenced to damage us and come down in that country.

Q. 15. If you don't know when they constructed this high stack, how do you know what caused it to come down there?

A. They were making smoke up there, making more and more, each and every year.

Q. 16. You don't know then that it was the construction
514 of the high stack by the Tennessee Copper Company that caused the smoke to come down there?

A. It never come in there when they had the roast piles on top of the ground.

Q. 17. You bought that land in 1905?

A. In May, 1905.

Q. 18. You know that the smoke didn't come in there until at least 1906, you know that don't you?

A. I know a suit was started the latter part of 1905 or the early part of 1906.

Q. 19. Don't you know that the smoke — in there until at least 1906 or later?

A. No sir, I do not.

Q. 20. Well, you bought your land in 1905, and some time after that it commenced to come in there?

A. Yes sir, came into Gilmer County.

Q. 21. Now, Mr. Shippen, your company has 108,000 acres of land in North Georgia?

A. No sir, land and timber.

Q. 22. Part of that you own as timber rights?

A. Yes sir.

Q. 23. About 60,000 acres you own out-right?

A. In fee, yes sir.

Q. 24. Now, you and those connected with your company are really the parties who got up this lawsuit?

A. I don't think so.

Q. 25. You worked at it a great deal?

A. No sir, I spent very little time, I spent three and a half

days on the 6th, 4th and 5th, and one-half of the 7th, worked about two hours on the 7th day of August.

Q. 26. Well, when this suit was first started, you know you and your brother, W. H. Shippen were at least partly the institutors of it?

A. No sir, the people were complaining all around through the County. Complaining in Gordon County, in Pickens County and Dawson County.

Q. 27. You were complaining?

A. No sir, people were complaining and filing suits.

Q. 28. You were not complaining?

A. We were not stirring up any trouble or getting up any evidence.

Q. 29. Do you mean to swear that you did not claim that your company was being damaged—didn't have anything to do with getting up that lawsuit?

A. Who do you mean by your people?

515 Q. 30. You and W. H. Shippen?

A. We have a treasurer and several other officials.

Q. 31. Did you and W. H. Shippen have anything to do with getting up this lawsuit?

A. No sir, we took some affidavits some years ago in the original suits against both companies, decided in the Supreme Court six or seven years ago.

Q. 32. Anyway, your company has a suit against the Ducktown Copper Company?

A. Not for damages.

Q. 34. But you have a suit?

A. We want some relief. We didn't think the State of Georgia was going on, and we went ourselves.

Q. 35. You have a suit pending in the United States District Court at Knoxville, have you not?

A. Yes sir.

Q. 36. You are seeking to enjoin them from operating their plant?

A. From turning gases loose in Georgia, that suit has been brought about four years.

Q. 37. You have taken evidence in the case?

A. Yes sir.

Q. 38. And it has been submitted to the Court?

A. Yes sir, and held up for some unknown reason to us. We are asking for relief.

Q. 39. That suit has not been decided yet?

A. Not that I have heard of.

Q. 40. You have not filed any bill against the Tennessee Copper Company?

A. Not that I know of.

Q. 41. Don't you know?

A. No, not that I know of.

Q. 42. Don't you know whether you have or not?

A. I don't think we have.

Q. 43. Don't you know you have not?

A. Not of my own personal knowledge.

Q. 44. Don't you know that you have filed no bill against the Tennessee Copper Company?

A. I say I don't know whether we did or not.

Q. 45. Do you swear that you don't know whether you have filed any bill against the Tennessee Copper Company?

A. I don't know whether we have or not.

Q. 46. You know you compromised with the Tennessee Copper Company?

A. No, I know from hearsay evidence if you want that.

516 By Mr. HILL: We except to the question and answer because immaterial and irrelevant.

Q. 47. Who did you hear say so?

A. Well, I heard Mr. Miller talk about it as much at Chattanooga as anybody I ever heard.

Q. 48. Have you heard any official of your company say so?

A. No sir.

Q. 49. Did you ever hear W. H. Shippen say so?

A. No sir, I don't think I have.

Q. 50. Did you ever hear the Treasurer of your company say so? Who is the Treasurer?

A. Mr. H. J. Patten.

Q. 51. Where does he live?

A. In Philadelphia.

Q. 52. Did you ever hear him say so?

A. No sir, I don't think I have.

Q. 53. Did you ever hear any official of your company say so?

A. No sir.

Q. 54. Are you going to swear that you don't know that your company compromised with the Tennessee Copper Company?

A. I know something by hearsay, I don't personally, because I wasn't in New York, I wasn't there, and I don't know what took place. I signed a paper that says for $1.00 consideration, and which is on record here in your Courthouse.

Q. 55. What kind of paper was it?

By Mr. HILL: We except to that as the paper itself is the best evidence.

Overruled. Appeal prayed and granted.

A. I say it is on record here, it is on the records below.

Q. 56. What do you mean by below?

A. In Gilmer County.

Q. 57. Tell the nature of that document?

By Mr. HILL: We object to that as being immaterial and irrelevant, and on the further ground that the paper itself is the best evidence of its contents. And on the further ground that the agreement on its face purports to be merely part of the entire agreement and refers to another agreement as a part of it.

517 Q. 58. Now, go on and tell the nature of that document?

A. It has been some time,—been over six years ago if I re-

member right, I think it is an easement, that is my recollection of it, I never read it but once, and I was Secretary of the company at that time and my brother was President and we both had to sign it.

Q. 59. It was an easement for what?

A. Well, it was in payment of damages from smoke fumes to our lands by the Tennessee Copper Company.

Q. 60. And they paid you fifty thousand dollars?

A. I understood it was that, I never saw the money and never had anything to do with it, and wasn't present when the contract was made. I was in Georgia. If you want me to testify from hearsay evidence,——

Q. 61. For that fifty thousand dollars, your company released all rights against the Tennessee Copper Company?

A. I don't know whether it was to pay up to date, I don't remember, whether it was for future damages or not.

Q. 62. Mr. Shippen, if you didn't release them from future damages, why didn't you file a bill,——

A. I don't know,——

Q. 63. If you didn't release them from future damages, why didn't you file a bill against the Tennessee Copper Company?

A. I don't know, that would be up to the president.

Q. 64. You are the Vice President?

A. Yes sir.

Q. 65. And very much interested in the company?

A. Yes sir.

Q. 66. You are a stockholder?

A. Yes sir.

Q. 67. You are one of the operators of the plant?

A. Yes sir, a salaried man.

Q. 68. And your deposition was given in the Ducktown Company case, the case your company brought against the Ducktown Company?

A. Yes sir, it was given.

Q. 69. You took an interest in that?

A. Yes sir.

Q. 70. Now, why is it that your company has not brought suit against the Tennessee Copper Company?

A. I don't know, I don't know whether that was for future
518 damages or not, I just saw the paper and signed it and turned it over to Mr. Cornick.

Q. 71. You know the plant of the Tennessee Copper Company is much nearer?

A. Yes sir.

Q. 72. Nearer to your land too, is it not?

A. Well, we have no land right south, immediately south in Georgia. Have some on the Georgia and Tennessee line over southwest, and I believe it is as near to the Ducktown Company as to the Tennessee Copper Company.

Q. 73. Ellijay is nearer to the Tennessee Copper Company?

A. Some nearer, we just have a mill there, have not much timber land right around the mill there. It is in the mountains.

Q. 74. Is not the great body of your land down in Georgia nearer to the Tennessee Copper Company?

A. Some is, and some nearer to the Ducktown Copper Company.

Q. 75. I wish you would name what single locality is nearer to the Ducktown plant?

A. That is, I think it is. (Looking at paper) I think Lots Nos. 19, and 27th District and Second Section, in Fannin County, Georgia, and I think,—Well, several lots right in here, all this dark red (Indicating on map) is the thirty thousand acres we bought in 1905. Here is some in Gilmer County and here is some in Ellijay—Here is the railroad—here is Blue Ridge.

Q. 76. Where are the two furnaces?

A. The Tennessee Copper Company is over here (Indicating) right over the Georgia line, in No. 4 I understand, in the 8th District & Second Section, and this other one is on Potato Creek, and Potato Creek comes down into the Ocoee River below the Tennessee Copper Company's plant.

Q. 77. Don't you know that the Ducktown Copper Company is almost directly north of the Tennessee Copper Company?

A. I don't know, I have been up there maybe two times, it is some north, but I think it is a little west.

Q. 78. As a matter of fact, is it not almost directly north; as a matter of fact is not Isabella somewhat east of north, looking at the Government map?

519 A. Yes sir, just a little I think, just a little ways, just a little east.

Q. 79. So it is, that all of your lands lie nearer to the Tennessee Copper Company's plant than to the Ducktown Company's plant?

A. Some is about the same in the 27th District and 2nd Section.

Q. 80. One little section you think, is about the same?

A. Several thousand acres in that boundary.

Q. 81. As a matter of fact as you measure it, don't it show to be near Copperhill?

A. A little bit nearer, but not much.

Q. 82. You also know that the Tennessee Copper Company's plant is a very much larger plant that that of the Ducktown Company?

A. I don't know, I was in the Tennessee Copper Company's plant about twelve years ago for about two hours. I have never been in the other plant, I never was in the Ducktown Company's plant, but have been close to it.

Q. 83. Anyway, it presents the appearance of having a much greater capacity?

A. It looks bigger, has a bigger stack, and has a much bigger acid plant, according to my ideas.

Q. 84. You don't know anything about the furnace plant?

A. No sir.

Q. 85. So you don't know anything about the relative capacity of the plant in controversy, or the amount of copper smelted by either of the companies?

A. No sir.

Q. 86. Now, you purchased that land you say,—thirty thousand acres, in 1905, what did you pay for it?

A. We paid for it in stock in the company, $120,000.

Q. 87. That would be how much per acre?

A. $4.00 an acre.

Q. 88. What is it worth now?

A. It is worth more money now than then.

Q. 89. How much more?

A. Well, I don't know. I saw some land that the Government gave $7.50 per acre, and our land is closer to the railroad and has good deal more timber on it.

Q. 90. How much is it worth now an acre on an average?

520 A. Some land there in Fannin County that lies right around our land, thirty thousand acres sold for thirty thousand dollars, and they borrowed from a trust company in Detroit Michigan, they borrowed four hundred and fifty thousand dollars on it, or $15.00 an acre.

Q. 91. I asked you what was the value of your land, what your land is worth per acre—You paid four dollars an acre?

A. It is worth $15.00 per acre.

Q. 92. So, those lands have increased in value nearly four times since 1905?

A. Yes sir.

Q. 93. What did you pay for your other lands that you bought in 1904?

A. 1895,—in the early part of the year.

Q. 94. What did you pay for those lands?

A. During the panic I think we paid $65,000 for 40,000 acres, *and* 20,000 acre timber deed and 20,000 acres in fee land, and the plant there, an old plant there, we paid $65,000.00 for.

Q. 95. What is that worth now?

A. Well, the plant burned up about four years ago, and we put in an up to date plant, the plant cost about $60,000 that we put in there.

Q. 96. Let's leave out the plant, what is the land worth?

A. The land in fee, we consider it worth about twelve to fifteen dollars an acre.

Q. 97. What is the other worth?

A. The timber deeds?

Q. 98. Yes sir.

A. About six or seven dollars an acre, about half.

Q. 99. Then that has increased in value about six or eight times since 1895?

A. Yes sir, it has increased, we thought it was a bargain when we bought it, we thought we had made our money when we bought it.

Q. 100. In addition to that, you have cut how much timber from those lands?

A. All together we have cut, I suppose, two or three thousand acres, that has been cut about ten years ago. There has been some trespassing on some of the land that we bought nine years ago, be-

fore we bought the land there had been some cut on it, but we never,——

521 Q. 101. How much land have you cut over, how many thousand feet have you cut?

A. I have not got that down in figures, but we cut about—we just took the big nature white pine and poplar.

Q. 102. How much did you cut?

A. Something like thirty five feet to the acre, we didn't cut it clean, didn't cut it like we would if we had been going to cut it out. That was ten years ago when lumber was cheap. Good lumber was not worth what it is to-day, lumber culls were hard stock, not worth much ten years ago, as compared with what it is to-day.

Q. 103. I asked you how much lumber you cut from your land?

A. About three to four thousand feet per acre.

Q. 104. How much did you cut all together?

A. About eight hundred thousand feet, that is, off of our own land.

Q. 105. Now, you say that the forests are sickly in North Georgia?

A. Yes sir, and in an unhealthy condition.

Q. 106. You say there is some timber dead?

A. Yes sir, great quantities of it in places, and dying.

Q. 107. You say that it is in a worse condition than elsewhere?

A. Yes sir, than in any timber country, in Kentucky or Pennsylvania, worse condition than it was twelve years ago.

Q. 108. Have you traveled over the Cumberland Mountains in East Tennessee?

A. No sir. I have been in Kentucky in Larue County, and have been through a good deal of the timber, and in Marion County.

Q. 109. When were you there?

A. About nineteen years ago.

Q. 110. You don't know how the forests are there now?

A. Not to-day, no sir, I don't know what they are in Pennsylvania.

Q. 111. Don't you know it to be a fact that the chestnut is dying all through the Allegheny Mountains?

A. No sir.

Q. 112. Fra away from here?

A. No sir, it has been twenty one years since I left Pennsylvania.

Q. 113. Don't you know it to be a fact that the hickories an- white pine are dying elsewhere in this locality?

522 A. No sir, not at any rate like it is here.

Q. 114. Do you know whether they are or are not?

A. No sir, but I read the lumber papers, though.

Q. 115. Do you or not know it to be a fact that practically all of the chestnut is dead in the Cumberland Mountains?

A. No sir.

Q. 116. And that great stretches of hemlock and white pine are dead in the Cumberland Mountains?

A. No sir, I don't know much about the white pine in the Cumberland Mountains. There is some in Western North Carolina and some in East Tennessee and some on North Georgia.

Q. 117. I am talking about the Cumberland Mountains in East Tennessee?

A. I don't know. I see by the lumber papers that the people handle and manufacture white pine, I see their advertisements and have seen and talked with some of them,——

Q. 118. I am not asking what they said. You have not been there, and you do not know anything about it.

A. No sir, but,——

Q. 119. Then as a matter of fact you have not visited any other forest to compare them with these parts?

A. Not since I have been in North Georgia.

Q. 120. That has been nineteen or twenty years ago?

A. It has been seventeen years.

Q. 121. Do you know anything about the forests and know that diseases do attack forests?

A. Well, I suppose when something comes along and kills the tree and kills the foliage, that a part of them will be attacked by insects and fungaous diseases, I know that much.

Q. 122. Do you know anything about the diseases of forests and know that where there is no smoke, nothing to attack the leaves, that diseases do attack the trees?

A. Yes sir, I suppose they do, once in a while, but not forty or fifty per cent of certain timber.

Q. 123. Now, don't argue, just answer my question. Do you know that diseases attack chestnut trees and kill practically
523 all of them when there is no smoke at all?

A. I have seen in the lumber papers that in Long Island and some of the Eastern States, about Pennsylvania, I have read recently they had the chestnut blight, that it has been there, but I never have seen where it has gone into the forests of North Carolina, or North Georgia.

Q. 124. That is just your opinion?

A. I have read after Mr. Henry Solon Graves, I have read several articles of his.

Q. 125. Do you really think he knows all about the timber in the United States?

A. I think he is a very good authority on forestry.

Q. 126. Because Henry Solon Graves has not yet stated there was a fung-us disease which has affected the chestnut in North Georgia, you don't believe it, is that so?

A. Not from what I know about it. I have been out in the woods, I was out in the woods last fall gathering chestnuts on Flat Top Mountain, out there two days gathering chestnuts.

Q. 127. You still have nice chestnuts up there?

A. Yes sir, in places.

Q. 128. Don't you know that hemlock and white pine are both trees that are especially subject to diseases?

A. Not in Pennsylvania where I was, and not here in North Georgia until the last six or seven years.

Q. 129. Do you know whether they are some where else?

A. No sir, I don't know.

Q. 130. Forest fires kill a good many trees, too, don't they?

A. I have seen forest fires in Pennsylvania,—well, people were burned up. The laps and big limbs and one thing and another along the logging roads. I have seen big timber burning, have seen it burn when the forests were green, but I have never seen anything like that in the south.

Q. 131. You have cut a good deal of timber, six or eight hundred thousand feet from this land?

A. Yes sir, off our own land. We have manufactured through our planing mill and saw mill about six million feet for about seventeen years, from North Georgia, white pine and poplar.

Q. 132. Then I take it that this part of the forests of North Georgia have been cut over?

524 A. Well, we have cut logs, and gotten logs from Bolten, right near Atlanta, Georgia, from Murphy, North Carolina, and from Farner, Tennessee, and from Canton, Georgia, and we have gotten logs from Unionetta, Georgia. We get logs from as far as Farner, and Murphy, North Carolina, and some above there on the Southern Railway.

Q. 133. Anyway, a very considerable part of the forests of North Georgia have been cut over?

A. Near to the railroad.

Q. 134. A good part of Mr. Vestal's land has been cut over?

A. I saw some he told me was his land, only had a map there, I have looked it over, and I saw on Tumblin Creek, there had been some cut over. He showed me some lands along there, and some of his lands I judge was cut over about ten years ago. Some poplar there, and considerable white pine, a great quantity of it dead, and the hemlock is dead, I am sorry to say.

Q. 135. Is it not a fact that the cutting of trees in the forests and leaving the laps lying among the other trees creates diseases which are imparted to those healthy trees?

A. I have not studied forestry, I don't know, it might cause it now and then, but if you happen in where there are three or four hundred trees that are dead, it is not from the cause you speak of.

Q. 136. Is it not a further fact that when they are left lying in the woods, they feed the flames that may break out and go through the woods?

A. When a fire — in the woods, it shows on the bark of the trees, burned,——

Q. 137. Will you answer my question?

(Stenographer repeats question.)

A. Yes sir, if it is very dry timber, and the stuff is dry around there it will burn if you set a match to it.

Q. 138. Now, I believe you state that the forests of North Georgia have been in an unhealthy condition for five or six years?

A. Yes sir. They don't look like other forests, the twigs and limbs,——

Q. 140. You mean to say that more than five or six years ago they were in good condition?

A. They were better ten years ago.

525 Q. 141. You said for five or six years they had been in an unhealthy condition?

A. Yes sir, in Gilmer County.

Q. 142. Just five or six years?

A. Yes sir, in Gilmer County.

Q. 143. Then they were not in an unhealthy condition in 1908 and 1909, is that correct?

A. Yes sir.

Q. 144. They got in an unhealthy condition about the time the acid plants went up?

A. I don't know when the acid plants went up.

Q. 145. Do you know from your understanding?

A. No sir.

Q. 146. You have been in Copperhill furnaces, around the plant?

A. I was at Copperhill at the Tennessee Copper Company's plant about twelve years ago, *twelve years ago,* just before my father died.

Q. 147. When were you last in Ducktown or Copperhill?

A. On the 7th day of August I was at the Station, I wasn't in the works of either concern, I was right up around the plants.

Q. 148. Was that the time you got choked?

A. Yes sir, the time it hurt my eyes and my nose and throat and made me cough. I think you would have coughed too, if you were in it?

Q. 149. Did you see anybody else coughing?

A. Yes sir.

Q. 150. Who else?

A. Mr. Sharpe.

Q. 151. Did you see him or did he tell you?

A. Mr. Sharpe and Mr. Adams and Mr. Vestal and myself were on that trip,——

Q. 152. Did you see Mr. Vestal coughing?

A. I saw two besides myself.

Q. 153. Did you all cough by consent?

A. No sir.

Q. 154. You didn't have any understanding that you were all going to cough when you went there?

A. No sir.

Q. 155. When were you up there before that time?

A. I was never in their plant. I was along there at the Ducktown Station about four years ago.

Q. 156. Did you cough then?

A. Yes sir, and smelled the smoke there then, and I coughed.

Q. 157. So it is, that every time you go through Ducktown you cough?

526 A. No sir, not every time, the railroad station, there at Ducktown Station—I have been through there a good many times.

Q. 158. It don't make you cough when you go around the Tennessee Copper Company's plant?

A. I never smelled the stuff there. I smelled it over at your

plant, I was down at the railroad and I wasn't up on the hill where those three or four nice little houses, I suppose the Manager's and Superintendent's houses are. I was down at the railroad on the road. I wasn't up around near their works. I was up above your works on a little hill just toward the Georgia line, a little hill that is a little bit higher than the acid plant and smelter, that I was talking about.

Q. 159. You were right up there, so you could look over in the stack?

A. No sir, I was back from the acid plant about a quarter of a mile away, I take it to be something near that.

Q. 160. Now, you have told a great many dates here, when you say things happened. You must have been running a kind of weather bureau down there, were you not?

A. Yes sir, I sat on the front porch a few minutes at dinner time, and a few minutes waiting for breakfast, and then the days are long, they are commencing to get shorter now, I would set out there at night until supper was ready, and sometimes I would go out after supper, because it was cooler than in the house.

Q. 161. The days were not getting longer in May?

A. Yes sir, they started getting longer the 22nd day of March.

Q. 162. They were not getting longer in July?

A. No sir, getting shorter.

Q. 163. They were not getting longer in August?

A. They are still long days, longer daylight than dark.

Q. 164. You must have stayed there all the time?

A. Sundays I did, pretty near all day.

Q. 165. You have given us hours from five o'clock in the morning until noon and then all through the afternoon?

A. Yes sir.

Q. 166. Do you mean you did nothing but sit there?

A. No sir, I had something else to do.

Q. 167. Were you sitting there on the front porch at all
527 the hours you have mentioned?

A. No sir, not all the hours I mention, you can see from the back of our store and the lumber yards, see up the Ellijay River valley, up near the Grist mill you can see Turniptown Mountain to the east, and on the lumber yards you can see the Ellijay River Valley and Flat Top and Bushy Head Gaps.

Q. 168. I say, you spent most of your time out there gazing at the tops of the mountains?

A. No sir, I would go home for dinner and then come back to the office and then go back to the house.

Q. 169. Everything you looked up toward turniptown Mountain, you saw a haze, you would jerk out your little book and put down that you had seen smoke?

A. No sir, there have been several days I was satisfied smoke was there, but not so much of it.

Q. 170. Didn't you put that down?

A. No sir.

Q. 171. Why didn't you record it every time, why did you put it down some days and not others?

A. I put it down when the smoke was strong, and no question of what it was.

Q. 172. You put it down every time it made you cough?

A. I put it down when I was up in Tennessee, I didn't testify it made me cough down there.

Q. 173. I notice sometimes in your book you say the smoke was strong and you say you smelt it, and sometimes you wouldn't say anything about smelling it, did you note it every time you smelled it?

A. No sir.

Q. 174. You mean to say you smelled it when you didn't put it down on that book?

A. Yes sir, I smelled it several times, I smelled it last year and the year before, I never kept any record of it.

Q. 175. As you were keeping a record and made notes that sometimes you smelled it, why didn't you note it every time you smelled it?

A. (No answer).

Q. 176. Why did you put down one time that you smelled the smoke and not other times?

A. I have in this record that I smelled it on Arnold Mountain, and around your works and in Gilmer County several times, I said so in there.

528 Q. 177. Well you say sometimes you smelled it?

A. Yes sir.

Q. 178. Then every time you smelled it, you made a note of it in your book?

A. Yes sir, I think so, I may have skipped one or two times, but I meant to make a note of it at the time.

Q. 179. Any way, every day this year you have looked at the top of Turniptown Mountain and saw that smoke?

A. I live two hundred feet higher than the town. And in going two hundred and fifty feet to my brother's house I can see the west end of Turniptown Mountain, Arnold Mountain and Northcutt's Orchard up there.

Q. 180. I am not questioning but that you can see Turniptown Mountain, but you don't know where that smoke comes from—that is a guess?

A. It is just like I have seen on the hill right in Georgia, at the Georgia and Tennessee line, and like I have seen right there in the Ducktown Basin right around the works, the same stuff that I saw coming out of the stack and the wind carrying it right into Georgia where we were. I smelled it there and down here, and I know what sulphur is when I smell it. Up until I was twelve years old we used sulphur matches.

Q. 181. As I understand from your book you didn't smell it but a few times?

A. Down in Gilmer County.

Q. 182. I am asking you about those times you have it noted,

when it was in there, when you didn't smell it, and those times you didn't know where it came from.

A. I didn't know when it was there, but the wind was coming from the north, and when the air is coming out of the north I seen it coming out of the north, and you are making that smoke and putting it out in the air, and it will come down there.

Q. 183. Now, there are from twelve to twenty stacks in the Ducktown Basin which emit smoke, is that true?

A. Why, several there, from the shaft houses where the mines are opened, but some of them are right near the ground, some places they are running there, and was burning coal, it looked to me like coal smoke, but I know the difference between coal smoke——

529 Q. 184. Now, you are talking a great deal more than I asked you about, I asked you if there were not twelve to twenty stacks in the Ducktown Basin emitting smoke?

A. I think there is more than that, I don't know whether they all emit smoke all the time or not.

Q. 185. Tell how many there are?

A. I don't know, but I suppose I saw——

Q. 186. How many did you see?

A. Well, above the Ducktown Copper Company's plant, I wouldn't be sure whether it was just east or west of it, it looked like five or six iron stacks, looked like there might be a pumping station or power house, I didn't go in it.

Q. 187. Then there were five or six there?

A. Yes sir, and two or three stacks, some small ones on top of the Ducktown Sulphur, Copper & Iron Company's plant, and one big one, a large one with a great volume of smoke coming out.

Q. 188. You say this was a large stack?

A. Yes sir, larger than the power house stack.

Q. 189. So taking the Ducktown Basin as a whole, there is a large amount of smoke emitted there from these various stacks?

A. Yes sir, both coal and copper smoke.

Q. 190. Then when those various stacks send out the smoke they gradually become mixed among each other?

A. Well, I have seen—From what I saw over there on Barnes Mountain and Granny Marr Mountain, on the Hotel Church House road, and the Burnt Store Church House, and on the road leading over to Mr. Pelfry's and over to the Burnt Store Church House, we could only see—occasionally we would see smoke coming from—it looked like coal smoke we thought, from those hoisting engines at the mines, most of it was sulphur smoke, big volume of it, we saw that coming together and mixing, and some days it was going to Frog Mountain and then coming down into Georgia.

Q. 191. Wouldn't that smoke rise very high and does it not get above the coal smoke—is the smoke sent out of the Ten-

530 nessee Copper Company's stack—does that not go very much higher?

A. No sir.

Q. 192. You know it is higher, don't you?

A. I didn't take the altitude up there from where it is. I am positive it is a higher stack from the ground to the top, but I don't know how much higher it is.

Q. 193. Don't you know it is 180 feet higher in altitude than the Ducktown Company's stack?

A. It may be, I cannot tell.

Q. 194. That causes the smoke to be sent out that much higher in altitude.

—. ——.

Q. 195. You know furthermore that the stack of the Ducktown Company don't go above the top of the building?

A. Yes sir.

Q. 196. You swear that it does?

A. Yes sir.

Q. 197. Then if the photographs on file by the State of Georgia shows to the contrary, the photographs are false, is that true?

A. At the time the photographs were taken, I saw several times when the photographs were being made, we was from over there two and one half hours around Ducktown.

Q. 198. Were you along with Mr. Adams?

A. Yes sir.

Q. 199. You saw him take the photographs?

A. Yes sir.

Q. 200. Were they correct?

A. Yes sir, I suppose they were, I saw the photographs to-day and they looked like they did through the camera, but as to the dead timber——

Q. 201. I am not asking you about that, I am asking about the photographs. The photographs around the furnaces are correct, are they not?

A. To the best of my knowledge. But those in the woods don't show——

Q. 202. I am not asking about the photographs in the woods. Now those stacks standing near there, five or six stacks you have mentioned, are they not as high as the furnace stack?

A. I don't think so.

Q. 203. They were higher——

A. They are a lower building, and I looked—I didn't look at them to see, they are smaller in size, two or three of them—my recollection is, higher than the others.

Q. 204. Don't you know that the smoke emitted from
531 them will be at about the same altitude as the smoke emitted from the furnaces?

A. I don't think so.

Q. 205. Is that so as to the various mines?

A. Some of them are on hills, yes sir.

Q. 206. Any way, when you are in Ellijay, Georgia, of course, you are not in view of those furnaces?

A. No sir, you cannot see them.

Q. 207. You see the smoke on the hills and as a matter of fact, it is very hazy and you see that and put it down as smoke?

A. When it is a little hazy I didn't put it down, but when there was a large volume of it on those mountains.

Q. 208. What do you mean by a large volume?

A. I mean it looked in places, at times, it looked like a fog, sometimes it was stronger than others——

Q. 209. There was——

A. —last Saturday when I went down on the train it was in that territory strong, after we got down here four miles south of Blue Ridge, I think at 12:45, all the way down, especially at Cherrylog, where we could see small mountains, it was wrapped up in smoke, and at Ellijay the mountains were all——

Q. 210. You have seen fog in those mountains?

A. Yes sir, when the fog comes out and brings the sunshine, the fog goes away, and the smoke don't, it hangs in there.

Q. 211. Don't you know the color of this smoke and fog is almost identical?

A. Yes sir, almost alike in color.

Q. 212. Before that high stack was ever erected, and before any smoke was ever in that country, you saw hundreds and hundreds of fogs?

A. Yes sir, I have seen them.

Q. 213. And they looked like this smoke?

A. Yes sir, but they don't smell like it.

Q. 214. Of course, I am not talking about the times you smelled it?

A. I never saw fog that would injure trees and fodder and beans and potatoes, or anything like that.

Q. 215. But everytime you saw fog and smoke on Turnip-
532 town Mountain, did you go up and examine to see if there was any injury?

A. No sir, but I did go by my garden. I raised all the stuff I eat, and I saw the effects on the garden; saw stuff damaged in the garden.

Q. 216. That is, just a time or two, a few times?

A. No sir.

Q. 217. I am talking about the smoke you saw on Turniptown Mountain?

A. Some days it would be up there, I saw it and smelled it, I saw it before I went up there, and I went up there in it.

Q. 218. Everytime?

A. No sir, I said sometimes, if you would listen, I said sometimes.

Q. 219. Sometimes it might have been fog, and not smoke at all?

A. I don't think so, it was in a period when there was no rain, I saw it in May, June and July.

Q. 220. Was there any of these days you have recorded there bright days?

A. Yes sir, I couldn't give the days—It might have rained some during some of these days, but I—If it rained in the afternoon I stopped it at dinnertime, if we had showers in the afternoon, I cut it off when I saw the smoke.

Q. 221. Did you cut it off whether the smoke went out or not?

A. I could see it was——

Q. 222. Don't you know that everytime you saw fog up there you noted it down as smoke?

A. No sir.

Q. 223. You never saw fog on any other occasions except those times you have noted?

A. I have seen fogs there, I never made no note of it, I have seen them go off, and this stuff hangs in there, goes down on the plant life, and when the wind blows it goes further on down and fog rises up when the sun comes out and disappears.

Q. 224. It don't disappear immediately?

A. In an hour or two it will move off, move out, and the smoke don't do that way.

Q. 225. Have you studied atmospheric conditions of all kinds?

A. No sir, I don't know as I have.

Q. 226. Have you studied fogs?

533 A. No sir. I don't know as I have.

Q. 227. Have you studied the conditions that govern fogs?

A. No sir, I have not studied it.

Q. 228. Don't you know the fogs in the mountains here are just as common as on the ocean?

A. I don't know, I have never been on the oceans much, I have been two trips from Savannah to New York.

Q. 229. Do you know why it is this mountain is called Smoky Mountain?

A. These in North Carolina?

Q. 230. Do you know why they are known as Smokey Mountains?

A. I don't think so.

Q. 231. Don't you know that this whole range of mountains in the Smokey Mountains?

A. No sir, I don't know anything about them, it is the Blue Ridge Mountains from Pennsylvania down through Virginia and North Carolina and over into Alabama.

Q. 232. You know that a great part of this mountain, at least the mountains through here are called the Great Smokey Mountains?

A. I have heard so, have seen it on the map.

Q. 223. You know why it was called that?

A. No sir.

Q. 234. Don't you know it is because of the presence for a good part of the year a smokey appearance?

A. I couldn't say that, I never was in the Smokey Mountains, it may be that I have crossed through them in the night-ime in traveling on trains, I have never been off the train in the Smokey Mountain Country.

Q. 235*p*. Do you know why this is called the Blue Ridge?

A. I don't know that I do.

Q. 236. Is it not because that from a distance it gives the appear-

ance of a blue smoke, and has done that from the early history of this country, and that is the reason it is called Blue Ridge?

A. I have seen this Blue Ridge Mountain in Virginia, also at Charlottesville and in through there, and nothing like there what I see on the mountains here.

534 Q. 237. Of course, you see smoke sometimes, and see fog sometimes, now, I am talking about the color of it, is it not a fact that when standing some distance from these mountains you see it has an appearance of a blue haze around the mountains?

A. Some days when the air is right way and when there wasn't any smoke in there, I can set on my front porch nine miles away from Flat Top Mountain, I live on Lot 84 11th District and 7th Section, nine miles according to the map, maybe nine and a half, I can see the timber, I can see the outlines.

Q. 238. That is some days, but are there not other days you cannot see at all, when there is not a sign of smoke on account of the blue atmosphere?

A. If a rain comes up, I can set on my front porch and not see the town of Ellijay because it is wrapped up in Ducktown smoke.

Q. 239. I am not talking about that. I want to know when there is no smoke in that vicinity anywhere, on some days, clear days, you cannot see the outline of those mountains because of the blue haze?

A. No sir, not when it is a clear day, I can see them.

Q. 240. Have you not seen many days when there was blue haze around those mountains when you knew the wind was out of the north?

A. No sir, not from my front porch, nine miles away.

Q. 241. Then you cannot tell why it was these mountains were called the Blue Ridge Mountains one hundred years ago?

A. I don't know why.

Q. 242. They are called that?

A. I don't know why.

Q. 243. You say this whole range is called that, all these mountains?

A. Yes sir——

Q. 244. Called the Great Smokey before they were inhabited by white people or when they first came here?

A. I suppose they were.

Q. 245. Now, you have one surmise, you said that you couldn't tell why it was that smoke was in there early in the morning unless they didn't operate their plant at night, you don't know anything about that?

A. I have heard——

535 Q. 246. I am not asking you what you have heard.

A. You asked me what I had heard about some other things, about the compromise that was made.

Q. 247. Do you know anything about when they operate their acid plant?

A. I can only say that I have seen in the morning when the

smoke was close to the plant, there was more smoke early in the morning than during any time in the day, and there is more smoke in Gilmer County early in the morning than up in the day.

Q. 248. Now, you have not answered my question. Do you know whether they operate the acid plant at night or not?

A. No sir, I don't, but I have heard——

Q. 249. I didn't ask you what you have heard. I am asking you now, I believe, you testified, Mr. Shippen, that when Mr. Adams was taking these photographs, you saw dead leaves on the trees?

A. Yes sir, I saw lots of them, that don't show up in those photographs.

Q. 250. Then the photographs are not correct?

A. Some of them don't show the conditions in there.

Q. 251. Then you swear positively his photographs are not correct?

A. I don't know how you want to put it, but if the trees are dead and the bark is off, they show in the photographs, but on some of the trees the leaves are entirely dead or was in a dying condition.

Q. 252. What color were those leaves?

A. Some of them were darker than others, I think some brown injury, but they don't turn brown all over, part of them were brown.

Q. 253. Partly brown and partly not?

A. Yes sir, they turned, some of them, turned practically red.

Q. 254. Some of them were practically red and some were brown?

A. Some of them were darker than others, I think some brown and some with brown spots on them.

Q. 255. Those that were brown in spots, was the remainder of them red?

A. No sir, a kind of pale green, looked sickly, and curled up and in an unhealthy condition.

536 Q. 256. Those were curled up and some of them were brown and some of them a darker brown?

A. Yes sir, some looked brown and some a darker brown, that is on the oaks.

Q. 257. How are the leaves on the other trees, they were brown too, were they?

A. Some of the pine was brown, yes sir, and some hickory brown, and some hemlock with the needles still hanging on.

Q. 258. They were black?

A. No sir, a dark color, but not all black.

Q. 259. Were they red?

A. Well, I stood under the trees, I stood close to them and looked at them, I didn't climb the trees.

Q. 260. I didn't ask you about that. Now, as a matter of fact, a great many leaves begin to turn brown in August, do they not?

A. I never saw them in this country unless smoke killed.

Q. 261. When you see a brown leaf in this country you say it is smoke?

A. No sir, not when I see one or two.

Q. 262. Nothing in this country ever browns or kills the leaves except smoke?

A. No sir, I don't say that. I have seen lightning killed trees, some by fire, and some girded with an axe.

Q. 263. Now, you have filed some exhibits, I want to ask you about them, Mr. Shippen, I wish you would look at your Exhibit No. 1, which is a black taken out of a Spanish oak, and state if it is not a fact that tree shows that there was no check in its growth before 1907?

By COUNSEL FOR PLAINTIFF: We except to the question as the witness has not qualified as an expert, he has simply identified the section of the tree as cut by him.

Overruled. Appeal prayed and granted.

By COUNSEL FOR DEFENDANT: I guess he has eyes, has he not?

A. I see the last six years on this, very small growth, but if you look up here into the center you will see this is a very large even grown up here until you get to the last six years.

Q. 264. That is up until 1907?

A. Yes sir, about 1907 or 1908.

537 Q. 265. Since that time there has been a very small growth.

A. Yes sir.

Q. 266. That is true, is it not, that the rings are naturally smaller anyway, when the tree is larger?

A. No, I don't know, sometimes it is that way, in small trees this size. I have seen about a regular growth all the way around right to the outside.

Q. 267. Now, look at your Exhibit No. 2 and state if it is not a fact that it shows a check in growth in the year 1908?

By COUNSEL FOR PLAINTIFF: We except to the question on the same grounds as stated in the last question.

Overruled. Appeal prayed and granted.

A. I cannot see this without my glasses, I can see just where it has commenced, but cannot see how many years, unless I had a magnifying glass.

Q. 268. Look at the point near the defect in the tree, does not that show——

A. That is only a knot, counting away from that—that is right there, I think (pointing to block).

Q. 269. Look and see if 1908 is when that——

A. I cannot tell unless I had a glass, I cannot see that unless I had my glasses on, or if I had a magnifying glass.

Q. 270. It has been for the last few years?

A. It looks like it has been the last six or seven years.

Q. 271. Regular growth until it gets out there?

A. Yes sir.

Q. 272. Look at your Exhibit No. 3 which is a cross section of a poplar, and state if it is not a fact that it shows a very stunted growth about fifty years ago?

A. Well, here is a growth in there that is a big growth until you get near the outside. Here is a growth in here that is about equal, about four or five right there, of course, the hard wood sometimes is not so big as the wood out here. This is oval, not exactly a round tree.

Q. 273. This has really been a serious defect in the growth in here, is that true, from time to time?

538 A. For a while it may have been, the tree may have been shaded, might be some bigger poplars there, several years ago, and it might have been cut out and poplar is a timber that wants lots of sunlight and will not grow to good advantage under a shade. Here is some big growth here (Indicating) here is the check in the growth.

Q. 274. That is there was a big growth up to some six or seven years ago?

A. Yes sir, it may be that tree was shaded by older trees and then they were cut out from around it.

Q. 275. But any way, the last stoppage of the growth was six or eight years ago?

A. Yes sir, it seems to be stunted from some cause.

Q. 276. And something like fifty years ago there was also a stoppage in growth?

A. Yes sir, the growth here seems to be small until it gets out here, it gets bigger, then it gets smaller again.

Q. 277. Your Exhibit No. 4, is it not a fact that tree shows no check in growth until 1906 or 1907?

A. Yes sir.

Q. 278. Now, is not the same true as to your Exhibit No. 5 which is a cross section of a black oak, don't you know that was checked some seven or eight years ago?

A. About seven or eight years ago, the last growth for seven or eight years was check- on that.

Q. 279. You are a saw mill man, of course, and you handle thousands of logs a year?

A. Yes sir, handle a good man-, we don't run the saw mill every day, don't get logs enough to run every day.

Q. 280. And you say you have had timber brought into your mill from all sections of North Georgia?

A. Yes sir, down almost to Atlanta.

Q. 281. You have had timber brought in there from around Epworth and up towards Blue Ridge and all through North Georgia?

A. Yes sir, we got some logs south of Blue Ridge, getting some now.

Q. 282. How many thousand logs do you suppose that your mill has cut within the last year?

A. Five or six hundred thousand feet.

Q. 283. About how many logs do you suppose that would be?

A. Sometimes one log will make over a thousand feet,

539 sometimes it takes twelve logs to do that.

Q. 284. Can you guess at the number of logs?

A. About seven logs to the thousand feet.

Q. 285. How many thousand feet did you cut in last year, just give a guess?

A. Something like a million feet in 1913.

Q. 286. About how many logs would that make?

A. About seven logs to the thousand,—it would be something like seven hundred thousand logs.

Redirect examination.

By Mr. HILL:

Q. 1. Something was asked about the price paid for land you bought in 1895, did you pay a good price or was it a bargain?

A. We figured it a bargain, the first land we bought was during a panic and lumber yards and banks were failing there in Louisville at the time.

Q. 2. The land you bought in 1905?

A. We thought that was a bargain.

Q. 3. I believe you said the land you bought in 1895 you considered your money made when you bought it?

A. Yes sir, it was worth more, it belonged to a man in another business, and he lived at Mobile, Alabama, Charles W. Stanton.

Q. 4. Is all that land of yours in timber?

A. Yes sir.

Q. 5. Hardwood?

A. Yes sir, unless it may be four or five acres in lots.

Q. 6. But chiefly it is in timber?

A. Yes sir, it was bought for timber.

Q. 7. Has hardwood increased or decreased in value?

A. Increased very much.

Q. 8. How much?

A. Well, when we went to North Georgia seventeen years ago, we paid six dollars for poplar logs, and we have to pay twenty five dollars for the same logs now. We paid fourteen dollars a thousand for first and second poplar. To-day we pay forty four dollars for the same class of lumber.

Q. 9. Then do you attribute the increase in value to your
540 land to the additional growth of timber on it, and also to the increase in value of what timber is left?

A. Increase in value of the lumber, the lumber is worth,—the stumpage, the value has increased.

Q. 10. State whether or not if the forests were in a healthy condition, the value of your land would be more than it is to-day?

A. Yes sir.

Q. 11. Is that true all through this section?

A. Yes sir.

Q. 12. You filed a suit,—But you didn't know much about that, you did file a suit and settle with the Tennessee Copper Company?

A. We filed a suit, we compromised, they come forward and acknowledged they were doing us damage and settled.

Q. 13. Did you and Mr. Shippen, your brother, alone institute the State's law suit?

A. No sir, I didn't.

Q. 14. Has there been or not general complaint in this section?

A. Yes sir.

Q. 15. Did other citizens complain to the State?

A. I think so.

Q. 16. Have you seen delegations there at the Legislature?

A. Yes sir, I went there, and I was there about seven years ago, seven or eight years ago, in 1907, I think it was, a great many people there from Gilmer and Fannin Counties, two hundred I believe.

Q. 17. What were they doing there?

A. Wanting the Legislature to give them relief from this smoke up here.

Q. 18. Now, on the land you own, you say the timber has not been cut off?

A. No sir. The two thousand acres we did cut, we didn't cut that clean, ten years ago, cut the poplar and the other timber was not taken off.

Q. 19. In cutting what timber you have cut, did you just take the best timber and leave the other to grow on?

A. We cut the mature trees, which had reached their prime, and we left the others to grow.

Q. 20. Is that or not to keep a good growth of timber on the land all the time?

A. Yes sir.

541 Q. 21. Do the logs you get come from each direction?

A. They come from north and south of Ellijay, some have come in the last two or three years, from Murphy, and we got some there several years ago, beyond there.

Q. 22. Does a large part of your logs come from what you know as beyond the smoke zone?

A. Some way down almost to Atlanta, yes sir.

Q. 23. Now, about your notes you took there on those days, state whether or not the smoke, or the Ducktown smoke as it is known in this section, is the chief topic of conversation with the people?

A. When it comes in there and they get a good whiff of it, and it kills their stuff, they complain.

Q. 24. Is that the reason everybody in this section notices when it comes?

A. Yes sir, when it does damage.

Q. 25. Did you ever see a fog on a bright sunshiny day?

A. No sir, I have seen one after a rain, and a few hours after the sun comes out, I have seen it disappear.

Q. 26. It would disperse the fog?

A. Yes sir.

Q. 27. Last Saturday, do you remember whether that was a bright day at the time you saw the smoke?

A. Yes sir, the sun was shining when the train left Blue Ridge going south, a bright afternoon, no rain. It rained in the morning and then the sun come out.

Q. 28. Was the smoke in there to a great or small extent?

A. It was in there to a large extent.

Q. 29. Can you tell the difference when you see a fog in the mountains and when you see smoke?

A. Yes sir, I think I can.

Q. 30. Have you lived in the woods a good part of your life?

A. I have been in the woods a good deal in Pennsylvania and have been in the woods almost every summer for a week or more. I trout fish some, I am fond of that.

Q. 31. From your observation, can you tell a fog when you see it?

A. Yes sir, I think I can. I have been on the waters of Manthahala River in Macon County, North Carolina, forty-five miles
542 from Murphy, I was there a week fishing, and I saw timber there, some of it was in a healthy vigorous condition, and the foliage was good.

Q. 32. Can you smell a fog?

A. No sir.

Q. 33. This smoke that comes down there, can you smell it?

A. Yes sir, when I was a boy, up until I was fourteen years old, we used sulphur matches, used sulphur candles in disinfecting houses.

Q. 34. Mantahala River is in the Smokey Mountains?

A. It is near Standing Indian Mountain.

Q. 35. In the Smokey Ranges?

A. Yes sir.

Q. 36. How far is that east from here?

A. It must be about sixty miles.

Q. 37. Sixty or sixty-five miles.

A. Yes sir.

Q. 38. You don't know why they are called Smokey Mountains?

A. No sir.

Q. 39. You have never seen this smoke in that section?

A. No sir, I was there for a week.

Q. 40. About the Blue Ridge Mountains, he asked you if they ever looked smokey and hazy, did you notice that when the smoke was not in there?

A. Yes sir.

Q. 41. Can you tell the difference in that smoke and the haze that appears in the distance?

A. Yes sir, when the smoke is in there it is all blurred.

(Thereupon the further taking of testimony in thisn cause is adjourned until 8 o'clock tomorrow morning.)

(Met pursuant to adjournment.)

The next witness, E. B. CLARKE, recalled by counsel for plaintiff, testified as follows:

Direct examination.

543 By COUNSEL FOR PLAINTIFF:

Q. 1. Since testifying last week, have you made any other trip out through Fannin County?

A. I have, yes sir.

Q. 2. In whose company?

A. In company with Dr. Hedgecock.

Q. 3. Where did you go?

A. One trip we went over to Hemp Top and from Hemp Top to Skeener Gap, and Swann, and then to Blue Ridge.

Q. 4. Was that east?

A. East and south east.

Q. 5. How far did you go on that trip, about how many miles did you cover?

A. That trip was about fifty five miles.

Q. 6. Then did you make another trip?

A. One trip we went over here about a miles north of Flat Top Mountain on Little Fightingtown Creek.

Q. 7. How much did you cover on that trip, how many miles?

A. About thirty miles.

Q. 8. Did you observe conditions of the forests as you passed through on those trips?

A. I did.

Q. 9. State what condition they were in?

A. The forest in general showed scorching and damage.

Q. 10. State whether or not the conditions which you describe as existing in the forests there, which you went on previously, would apply to these?

A. Yes sir.

Q. 11. Did you or not find that condition existing everywhere?

A. Found it more prominent in this last trip to Flat Top Mountain and Young Cane, in Union County.

Q. 12. How far is Young Cane from the plant of the Ducktow-Company?

A. By road, I would say it is thirty two miles.

Q. 13. Do you know how far it is air line? from the copper plant?

A. About twenty one miles.

Q. 14. Did you find the same evidence of damage there?

A. Slight discoloration of the leaves.

Q. 15. How did that damage appear as you came back
544 towards the Ducktown Copprt Company's plant?

A. It was more prominent.

Q. 16. Now, on your trip west of here to Fightingtown Creek, describe conditions you found existing there?

A. They were similar conditions as we found and described on previous trips of last week.

Q. 17. Did you go on Big Frog Mountain west of the plants?

A. We did this week, yes sir, in Tennessee.

Q. 18. Did you notice the west slopes of the mountain?

A. Yes sir, the east and west slopes.

Q. 19. What were the conditions there?

A. Several places on the west slopes where there was very severe damage, on the east slopes, and one or two places spots of fully one hundred and fifty acres completely browned find the ground covered, badly scorched.

Q. 20. Was or not the conditions on the west slopes similar as in Georgia?

A. Similar, but not as severe on the east slopes.

Q. 21. On that trip west, what about the reproduction of the trees there?

A. I saw some reproduction, but not much. None indicated recent reproduction, that is for the past two years. Also at a saw-mill there, Joe Quintrell's, there were eight stumps pinus echinata, trees cut down this year. We went on the yard at the time, and made comparison of the growth for the past seven years as compared with the previous seven years. I took the measurements on each stump.

Q. 22. What was the results of those measurements?

A. I have it typewritten, just would like to tender it.

By COUNSEL FOR DEFFENDANT: You had better read it into the record.

By COUNSEL FOR PLAINTIFF: Just let the stenographer copy it into the record.

The statement referred to is as follows:

Measurements of the Growth of Pinus Echinata (Short Leaf Pine), Eight Trees, Taken August 15, 1914, at the Joe Quintrell Saw Mill, One Mile North of Flat Top Mountain, on Little Fightingtown Creek, Fannin County, Georgia, Measurements Taken in Four Quadrants, Showing Comparative Growth During the Last Seven Years, the Previous Seven, and During the Life of the Tree.

545

	Years, 1 to 7.	Years, 8 to 14.	Years, 1 to 25.
Tree #1.....	7/8"	1 7/8"	8"
	1	1 3/8	7 1/8
	7/8	1 1/2	7 1/8
	5/8	1 1/2	6 1/8
Average Radial Growth..	0.844"	1.56"	7.09"

Tree #2.....	7/8"	1 3/4"	11 1/8"	
	7/8	1 3/4	10 5/8	
	3/4	1 1/2	9 1/2	
	1/2	1 1/4	5 3/8	
Average Radial Growth..	.75"	1.56"	9.15"	28 yrs.
Tree #3.....	5/8"	1 3/8"	8"	
	3/4	1 3/8	6 5/8	
	3/4	1 1/2	7 3/4	
	1	1 1/2	8 3/8	
Average Radial Growth..	.781"	1.437"	7.69"	26 yrs.
Tree #4.....	3/4"	1 3/4"	8"	
	7/8	1 3/4	8 5/8	
	3/4	1 3/4	8 3/4	
	3/4	1 3/8	5 3/4	
Average Radial Growth..	.781"	1.656"	7.781"	
Tree #5.....	1 1/4	2 1/2	11 3/4	
	1 1/2	2 1/8	10 1/4	
	1 3/8	2 1/2	10 3/8	
	1	1 5/8	9 1/8	
Average Radial Growth..	1.281"	2.19"	10.375"	
Tree #6.....	7/8"	1 1/2"	7 1/8"	
	1	1 3/4	7 7/8	
	7/8	1 1/2	6 7/8	
	1	1 5/8	7 1/4	
Average Radial Growth..	.932"	1.594"	7.03"	
Tree #7.....	3/4"	1 5/8"	8 3/8"	
	7/8	1 3/8	9 1/4	
	1	1 3/4	10 3/4	
	1 1/8	2	11 3/8	
Average Radial Growth..	.937"	1.687"	9.937"	
Tree #8.....	1"	1 3/8"	6 3/8"	
	1	1 3/8	6 1/2	
	1	1 5/8	6 7/8	
	3/4	1 3/8	6	
Average Radial Growth..	.937"	1.437"	6.437"	26 yrs.

Average Radial Growth for All Eight Years.

1 to 7 years.	8 to 14 years.	1 to 28 years.
0.905 inches	1.64 inches	8.186 inches

546 Q. 23. You say those measurements were taken by yourself?

A. Yes, sir.

By COUNSEL FOR PLAINTIFF: We will just consider that is copied into the record.

Q. 24. Was Dr. Hedgecock with you at the time?

A. Dr. Hedgecock and Mr. Vestal, Mr. John Vestal and Mr. Sharpe.

Q. 25. Did Dr. Hedgecock assi-t you in making those measurements?

A. He did.

Q. 26. Now you stated there seemed to be some little reproduction, did you notice in regard to the young trees, I mean whether there were many within the past two or three or four years?

A. No, very few coming up from seedlings within the past two orn three years. Of course, there were a few spots in a few places, but not general growth in probably ten or fifteen years.

Q. 27. The past four years, how was it?

A. Practically none whatever.

Q. 28. I hand you a section from a tree which I ask you to indicate as Exhibit No. 1 to your deposition, and state what that is Mr. Clarke?

A. That is a pinus echinata, short leaf pine, it is on that test tree. That is tree No. 2.

Q. 29. What did you determine from your examination of this section?

A. I want to show not only the fact that it shows a lesser for the past seven years than the previous seven years, and also that the growth of it is not symmetrical.

Q. 30. Now, Mr. Clarke, taking that section I will ask you to state whether or or not with an Intrement Borer you could determine the growth or the restriction in growth of the tree by taking one boring from the tree?

A. No, it would only show the growth in that particular spot.

Q. 31. Is that true in all these different sections?

A. Yes, sir.

Cross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. Now, Mr. Clarke, this section of the tree that you have introduced is exceptional, it shows an exceptional irregular
547 growth, does it not?

A. Yes, sir, it shows an irregular growth, this is one we came across.

Q. 2. How many trees of that character did you find?

A. Several of them—I don't believe any one of the eight was symmetrical. That was the worst of the eight.

Q. 3. This was by far the worst of the eight.

A. It was one that was irregular, you will not find it by far the worst.

Q. 4. But this has grown two-thirds on one side has it not?

A. Yes, sir.

Q. 5. You didn't find anything else like that?

A. No, but this is for comparison, for the purpose of showing what the Intrement Borer would show in it.

Q. 6. You just wanted to show this was extraordinary?

A. No, not extraordinary not ordinary though.

Q. 7. Then it is not the ordinary conditions existing there?

A. No sir.

Q. 8. But now Mr. Clarke, if you come over on the side of this tree which has grown the slightest, and run in your Intrement Borer, that will show that the growth for the last seven years wasn't as great as for the previous seven years?

A. Yes, sir, it will.

Q. 9. If you go right over on the right side and run your Intrement Borer, it will show exactly the same conditions for the last seven years, but it has not grown as rapidly?

A. Yes sir.

Q. 10. So far as the final result is concerned, exactly the same thing would result?

A. Not necessarily.

Q. 11. Look at this here, state if that is not true, make no difference on which side you take the section it shows exactly the same results?

A. No sir, if you start right here and bore in you have from here up to here, you have not quite half an inch of growth, now if you take the instrument and bore into another spot, right here, (Measuring).

Q. 12. How much growth would you get there?

A. *58* of an inch.

Q. 13. You didn't understand what I meant, I say so far as the relative growth is concerned it makes no difference from which point you take your sections, that it shows for the last seven years
548 the growth has not been as great as for the previous seven year?

A. You would only strike that in case you hit the smaller spot.

Q. 14. But if you go in at any spot in that tree where you want to, does it not show that condition?

A. No two points,—you first have to determine the smallest growth.

Q. 15. I don't care about that—you point out any spot in that section where if you take a core with an Intrement Borer, it will not show the growth of that tree was less the last seven years than it was the previous seven years?

A. It certainly will, I am trying to tell you that, less the last seven years.

Q. 16. That will be shown regardless of where you take the core?

A. Yes sir, on this block, certainly, that the growth for the last seven years is smaller.

Q. 17. And any core taken from that, this sample you have introduced, taken from that sample regardless of the side on which it was taken it would show exactly the same results?

A. Probably will on that block.

Q. 18. Don't you know it will? Is it not before your eyes and can you not see it will?

A. It will there, yes sir.

Q. 19. You reach exactly the same results with that method of examination, that is the growth for the last seven years has been less than for the previous seven years?

A. Exactly.

Q. 20. Now, let's see if I can understand these figures you have introduced here. Take No. 1, do I understand that means for the last seven years No. 1 has grown .844. of an inch?

A. No. I took four sections of the tree, for instance like this (Indicating) in the growth, the first seven years, then seven to 14, and from there on, the total growth, getting 4 growths, one in each part. For the first seven years that growth was seven-eighths of an inch. The second seven years 1 7/8 of an inch, and from 1 to 25 years eight inches from the center to the outside, that is the measurement in four quadrants. The average growth from the center out, .84 inch. The second seven years 1.56 of
549 an inch. The average growth of the tree was 7.09.

Q. 21. That is the total average increase on an average?

A. Yes sir, I took four measurements on each tree.

Q. 22. Now from one to twenty five years that included the entire life of the tree?

A. Yes sir, I only found eight stumps there, they included different ages, most of the- included twenty five to twenty six and twenty eight years.

Q. 23. Now, in the first column, you say seven years, you mean 1 to 7 years inclusive. You compute it for 7 years?

A. Yes sir.

Q. 24. Then from 8 to 14 years, you include the 14th.

A. Yes sir.

Q. 25. That was for seven years?

A. Yes sir.

Q. 26. Then as I understand, for the last seven years, the tree grew on an average .12 of an inch per year, is that correct?

A. Well, yes, the average down, of course, it would be a good average, a growth of seven years of .84.

Q. 27. In the second seven years it grew a little over .22 inch?

A. It grew 1.56 inches.

Q. That is the first sample you have given here?

A. Yes sir.

Q. 29. Now could you tell any difference in the eighth year back and the seventh year back?

A. Difference in the growth?

Q. 30. Yes sir, the increase there, does it plainly indicate it?

A. Well, that is the increase, seven eighths of an inch is the average for the entire seven years.

Q. 31. Here is the average right here (Indicating on paper).
A. That is the average of the four sections.
Q. 32. 1⅞ of an inch is the average for seven years?
A. Yes sir, total, one section, yes sir.
Q. 33. That is the total?
A. For the seven years.
Q. 34. So you couldn't testify now whether there was any difference in the growth in 1906 and 1907?
A. I had not tried to do that.
550 Q. 35. Now, at whose instance did you make this last trip, these last trips?
A. Dr. Hedgecock and I decided we would go out on these trips.
Q. 36. So you have made these two trips in an effort to prove the Intrement Borer was not reliable?
A. In one sense, yes sir.
Q. 37. Do you think you have done that?
A. No, not to your satisfaction.
Q. 38. On your first trip how far did you go away from the furnaces?
A. Have you reference to the one on the east?
Q. 39. Which one did you take first, I believe you said you went to Hemp Top Mountain?
A. Yes sir, that would be about twenty one miles from Ducktown.
Q. 40. As a matter of fact there was a great deal of dry weather in here during the early part of the summer?
A. Well, we had some dry weather.
Q. 41. Didn't the weather get so dry it scorched up many of the leaves?
A. I couldn't say that it did.
Q. 42. Don't you know a great many of the leaves turn a sickly color and almost died?
A. I don't think we have had a dry spell that would cause that around here.
Q. 43. Have you not seen weather so dry it would cause a good deal of the timber to appear like it was killed dead?
A. No, I have not.
Q. 44. Didn't you see that in 1912, were you here in 1912?
A. I was all summer.
Q. 45. You were not through the hills and mountains at that time in East Tennessee?
A. No sir, I spent 1912 in North Carolina,—No, I spent it right here in Georgia.
Q. 46. So you know it to be a fact that extreme dry weather will cause leaves on a good many kind of trees to turn brown?
A. Cause them to curl up, but I don't think we ever had a dry spell enough for that.
Q. 47. How far did you go away from the road on these trips?
A. Didn't go away from the road at all on this trip to Young Cane.
Q. 48. Where was it you inspected these stumps?

A. We did that at the Fighting to-en Creek at Joe Quintrell's saw mill.

551 Q. 49. How far is that from the Tennessee Copper Company's plant?

A. About ten miles air line.

Q. 50. In what direction?

A. To the northeast, twelve miles from Isabella.

Q. 51. You speak of Big Frig Mountain,——

By COUNSEL FOR PLAINTIFF: Do you mean Quintrell's place was northeast of Ducktown?

A. No sir, Ducktown is northeast from that?

Q. 52. Big Frog Mountain is in Tennessee?

A. Yes sir.

Q. 53. Is that part of the land the Government has recently bought?

A. I don't think they have bought it, it is under contract.

Q. 54. Is that part of the Wetmore lands?

A. I think it is the Alaculsa lands.

Q. 55. The Government is contemplating purchasing those lands?

A. Yes sir.

Q. 56. How far is that located from the Isabella furnaces?

A. (Measuring on map) four miles, that is the nearest to the Tennessee Copper Company.

Q. 57. How far is that where you notice those patches from the Isabella furnaces?

A. Twelve miles.

Q. 58. How far were you from the Tennessee furnaces?

A. Just about the same, probably about a mile difference.

Q. 59. That was in almost an east direction?

A. No, west, the plants are east of Frog Mountain.

Q. 60. You mean the plants are east of Frog Mountain?

A. Yes sir.

Q. 61. Now you spoke of some of the lands being within four miles of Isabella?

A. You asked me how near the Government land was, and I said about four miles.

Q. 62. How far are those lands from the Tennessee Copper Company?

A. About four and one half miles from Isabella and four miles from the Tennessee Copper Company?

552 Q. 63. Now, is that thr Frog Mountain, this land you are talking about?

A. That is the extreme point of the Government lands.

Q. 64. That is along the end of Frog Mountain?

A. Yes sir, down about the foothills.

Q. 65. This Frog Mountain extends back about eight miles.

A. The top of Frog Mountain is approximately nine miles air line from Copperhill.

Q. 66. I asked you a while ago about those patches you spoke of any you said they were east of Forg Mounatin?

A. I said some were twelve miles west of Copperhill, others were nearer, on the east side of the mountain.

Q. 67. Did you see any of those places east of part of the mountain and only four miles away from Isabella?

A. No, they wasn't that close on Frog Mountain.

Q. 68. Now those patches of trees and leaves, you say they were brown?

A. Yes sir.

Q. 69. You say you saw as much as 150 acres?

A. Yes, sir.

Q. 70. Then you would see great stretches that didn't have any appearance of being brown?

A. Didn't have the appearance of being almost completely killed, still they were damaged by smoke.

Q. 71. Didn't you see great stretches that had no appearance whatever of smoke fumes that you could see?

A. I cannot say that I did.

Q. 72. Can you say you didn't?

A. Yes sir.

Q. 73. To what extent were those great stretches scorched and browned?

A. I saw patches that looked like they were almost completely killed, one hundred and fifty acres, I saw two patches that size. I will further state that I didn't see any great stretches that didn't show any damage whatever.

Q. 74. You saw stretches of a good deal more than one hundred and fifty acres that showed no damage whatever?

A. I don't think I did.

Q. 75. Did you go up among it?

A. Yes, sir.

Q. 76. You just now testified you never got out of the road?

A. I said when I went to Young Cane, over there we was
553 about three days.

Q. 77. How far did you get off the road on that trip?

A. I don't know how far, we didn't see any road for two days.

Q. 78. Did you go all through those mountains on that trip?

A. Went through the mountains, I couldn't say we went all through them.

Q. 79. You went right around in these patches?

A. Yes sir.

Q. 80. You don't mean the trees were killed, you mean the leaves were scorched?

A. Yes sir, the leaves were scorched and dropping. Of course, that don't indicate the tree is killed——

Q. 81. You mean to swear those trees are dead?

A. I don't mean the trees are killed, they might put out again the next year and then they might not.

Q. 82. Now you said something about there was indication of reproduction in certain sections, about what sections were you testifying at that time?

A. Flat top.

Q. 83. How far is that from the furnaces?
A. Ten miles air line, where we were.
Q. 84. I believe you say for the last two years there has not been much indication of reproduction?
A. Not much seedlings.
Q. 85. Over how large a territory did you notice that?
A. All along where we went.
Q. 86. That is where you followed the road?
A. Yes sir.
Q. 87. You didn't get out in the forests at all?
A. Practically none, we went through a few acres, not enough to say that we went through the forests.
Q. 88. There was reproduction on up to two years?
A. No sir, most of it looked five, ten or fifteen year old.
Q. 89. Will you tell me why you limit it to two years and not more than that?
A. I said there was practically nothing come up the past few years.
Q. 90. Didn't you say the past two years?
A. Probably I did.
554 Q. 91. Do you know whether or not the ground has been burned over and the leaves which fell from the trees within the last two or three years?
A. The part I speak of hadn't been burned in the past two or three years.
Q. 92. Did it burn four years ago, and if so, could you have told it?
A. Yes sir, if it was a severe burn.
Q. 93. If you didn't go down and make an examination,——
A. Going along the road I could tell.
Q. 94. For how many years?
A. I said four or five years.
Q. 95. Did you ever look to see?
A. Yes sir.
Q. 96. You wasn't looking for that, you was looking for smoke, wasn't that what you were looking for?
A. No, not looking for smoke then, looking for damage.
Q. 97. Didn't you and Dr. Hedgecock — to find the smoke injury and wasn't you looking for that all the way through?
A. We were looking for smoke injury.
Q. 98. You wasn't looking for healthy trees, but looking for trees injured by smoke?
A. Yes sir.
Q. 99. Hence you were not calculated to see the good side but looking for the bad side.
A. We could see the good side, what was the use of looking for that, we were looking for smoke injury.
Q. 100. So you are swearing about the bad and not the good.
A. Certainly, we were looking to see if there was damage.

Redirect examination.

By Counsel for Plaintiff:

Q. 1. Did you look at the good timber as you passed, you noticed that, but you made no examination of it.

A. No sir, we made no examination of it.

555 Q. 2. You were looking at the General conditions as you passed what was good and what bad?

A. Yes sir.

Q. 3. And the bad you examined?

A. Yes sir.

Q. 4. Mr. Clarke, going back to this section, state whether or not an Intrement Borer will show in any—at this point for instance, if you notice here, the relative growth for any two successive years to be the same as it will at this point?

A. No, it will not.

Q. 5. You say it shows a general retardation of growth for the past seven years?

A. Yes sir.

Q. 6. Will it show at any two points the same relative growth for two successive years during the past seven or eight years?

A. No, I don't think it would.

Q. 7. Is that or not whay you say you don't think the borer would show exact conditions?

A. I don't think it will, and I don't believe anybody in the forest service would try to show the relative growth with it, it is used almost solely to determine the age of small trees under six inches in diameter, where you can get the core of the tree.

Q. 8. It will do that?

A. The Intrement Borer only takes out about six inches, you couldn't go to the center of that tree.

Q. 9. State whether or not it is the rule or exception of a tree to be perfectly symmetrical?

A. It is the exception.

Q. 10. That is, I understand, most trees are out of symmetry? As is this one?

A. Not probably as much.

Q. 11. But it is a rule that they are not symmetrical?

A. Yes sir.

Q. 12. Speaking of this list or record, you speak of the years from 1 to 7 and from 8 to 14 inclusive, by 1 to 7 which did you designate, the inside or outside?

A. The outside, started from the last growth of the tree.

Q. 13. You call the last ring No. 1?

A. Yes sir.

556 Q. 14. So you call from one to the other, that is really the last seven years' growth or life of the tree?

A. Yes sir, that is explained in the paragraph preceding that.

Q. 15. State whether or not the conditions which you found exist-

ing on these various trips of browned and parched leaves is injurious to the timber growth?

A. Yes sir, it is.

Recross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. How far into a tree did you say the Intrement Borer will go?

A. Abour four inches.

Q. 2. You cannot get further than that?

A. Not without a special borer.

Q. 3. If there is one, you don't know anything about it.

A. The borer I used is three to three and one half inches.

Q. 4. Just as far as possible to go in?

A. Yes sir.

Q. 5. So if there are samples filed in this case five and six inches long with the cores taken out by the borers, you are not familiar with that?

A. I am familiar with the Presller borer. I understood that was the one you had reference to.

Q. 6. Anyway, if those samples are from five to six inches then they could not be taken out by a borer with which you are familiar?

A. Not the Pressler borer, you may have used some other kind of borer.

Q. 7. Who said anything about any other kind of borer that was used?

A. You didn't say anything about the kind that was used but you asked me if I was familiar with the Pressler borer.

Q. 8. Didn't you say you was?

A. Yes sir.

Q. 9. And wasn't that the reason you were asked?

A. I don't know.

Q. 10. What other kind of borers are there besides the Pressler?

A. I don't know of any other, that is the kind I use.

Q. 11. Where is that manufactured?

A. I don't know.

557 Q. 12. You are not familiar with the Swedish Intrement Borer?

A. No sir.

Q. 13. The one manufactured there and cannot you purchase in this country?

A. No sir.

Q. 14. You never saw that?

A. No.

Q. 15. You don't know anything about it?

A. No sir.

Q. 16. Didn't you make a mistake when you told Mr. Hill that if you take an Intrement Borer and go into this tree, (Indicating) at different points, that it wouldn't show the relative growth for the last seven years. Is not this what you meant to say, that the borer

wouldn't show the same growth on a different side for the same years?

A. That is what he asked.

Q. 17. That is what you meant, wasn't it?

A. I answered his question, yes sir.

Q. 18. How far is it to the heart of the tree from the outside, Mr. Clarke, your Exhibit No. 1.

A. At this point, (Indicating) about four and nine tenths inches

Q. 19. That is the narrow point?

A. Yes sir.

Q. 20. The broader part, how much is it?

A. Almost eight and one half inches.

Q. 21. It has grown nearly two times as much on one side *is* the other, that is true, not only the entire life of the tree, but it is true from seven years ago. It grew two times as much on one side as the other?

A. Yes sir.

Q. 22. Up to about seven years?

A. Yes sir.

Q. 23. Do you have any idea what caused that? Wasn't there a wound in that side of the tree—when was this gap cut?

A. That was there the logs was cut, I cut the rest off in order to carry it in.

Q. 24. Do you have any idea what caused that irregular growth?

A. Probably shaded on one side or on a hillside.

Q. 25. Anyway there was some local cause that caused it?

A. Yes sir.

558 Redirect examination.

By Counsel for Plaintiff:

Q. 1. Mr. Clarke, look at the rings around the outside of that tree, state whether or not the second ring at this point (Indicating) is wider than the second ring at this point, take this point here?

A. (Looking at block.) It is.

Q. 2. State whether or not the first ring at the same point here is wider than the first ring at this point?

A. Yes sir, it is.

Q. 3. Then if a ring shows wider for the year 1912 at one point than the ring for 1912 at another point, and shows narrower at 1911 at the first point than the ring for 1911 at the second point, would that show the relative growth for those two years?

A. I couldn't say it would.

Re-cross-examination.

By Counsel for Defendant:

Q. 1. Now, I call your attention to the point here designated by Mr. Hill, is it not a fact this shows that growth for the last two years is much in excess of the growth for the previous years?

A. Combined or separate?

Q. 2. Separate?
A. I cannot say they do.
Q. 3. Take this (Indicating) look at this point, look there,——
A. Well, you pick out one point.
Q. 4. State if four fifths the distance from here to here shows the growth in the last two years as much in excess than the growth for the previous two years?
A. No sir, look here.
Q. 5. Well, we will say nine tenths, don't it show growth for the last two years in excess?
A. I say no.
Q. 6. Are your eyes good?
A. You can examine it.
559 Q. 7. I have examined it—that is all.

The next witness, GEO. W. HEDGECOCK, recalled, by Counsel for Plaintiff, testified as follows:

Direct examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. Since you- deposition was given the other day, have or not you made any other trip to Fannin County?
A. I have, made two trips from Blue Ridge, one over in Tennessee, starting from Etowah.
Q. 2. Did you go into Union County, Georgia, to Young Cane?
A. Yes sir, went to Young Cane in Union County by one route and returned by another.
Q. 3. About how much distance did you cover?
A. We went from fifty-five to sixty miles.
Q. 4. Did you or not find the general conditions existing which you described in your deposition last week?
A. Yes sir, but not so severe.
Q. 5. Were those points further away?
A. Much further.
Q. 6. Where was your next trip to?
A. West from Blue Ridge, we went to the base of Flat Top Mountain, about a mile from the top of it.
Q. 7. How far was that from the plant of the Ducktown Copper Company, if you know?
A. About ten miles from Copperhill, almost ten and a half from Isabella.
Q. 8. Did you or not find the same general conditions existing in that direction?
A. We found the injury much more sever- in that direction, but not quite so severe as it was north and northwest, I am speaking now of acute injury.
Q. 9. Were those in what you denominate the chronic zone of injury?
A. In the chronic zone, the acute is north rather from where we went on this trip.

560 Q. 10. Now did you make another trip?

A. We made a third trip from Etowah down to Conasauga and out through there, went up on Big Frog Mountain and returning back down to Cisco.

Q. 11. Were you on foot or in conveyance?

A. Part of the time in conveyance, about eleven miles east of Conasauga, and then on foot, we went beyond the top, returning back to Chables place and then took a horse from there to Cisco.

Q. 12. How long were you out?

A. Three days on that trip.

Q. 13. In the woods the entire time?

A. In the woods practically all the time from eight o'clock in the morning of the first day to three o'clock on the afternoon of the third day.

Q. 14. Did you spend any nights in the woods?

A. We spent one night entirely in the woods.

Q. 15. Were you on the roads or through the forests?

A. We were traveling largely on trails, on mountain roads occasionally and frequently out in the forests.

Q. 16. What conditions did you find existing on that trip?

A. I found chronic injury beginning at a distance of about fifteen miles air line from Copperhill and about sixteen miles from Isabella to the southwest of Big Frog Mountain. This chronic condition continued all the way as we drew near to Big Frog Mountain, and I noticed the acute injury on a number of the leaves on the west slope of the Big Frog Mountain, found acute injury, and some on top and over the east side, I found large areas of acute and chronic injury there throughout the whole territory.

Q. 17. What conclusions did you reach as to the traveling of the smoke, by finding it on the west slopes?

A. It goes over or around the Big Frog Mountain.

Q. 18. Was that damage due to sulphur dioxide?

A. It is, in my opinion, due to that, exactly like damage produced by it.

561 Q. 19. Do you know Dr. Haywood, in the Government service?

A. Yes sir, I know him.

Q. 20. Are you familiar with the zones of injury fixed by him in 1907?

A. Yes sir, I talked with him personally about the injury and am also familiar with his bulletins.

Q. 21. Are those the Government Bulletins?

A. Yes sir.

Q. 22. Have you seen the map drawn showing that?

A. I have seen a map drawn by the Forest service, gotten up by Mr. Patterson.

Q. 23. From all your trips to this section, I will ask you to state, and from your familiarity with the zones as fixed by the forest service, I will ask you to state whether or not there has been any dimunition or retardation or restriction rather of the zone since, 1906, 1907.

A. All the points I have visited was none, in fact in one direction there was an increase, to the west.

Q. 24. And in other directions?

A. It is about the same so far as I can see from what was described, in this area.

Q. 25. What did you notice in those sections as to the dropping off of the growth of the trees?

A. We couldn't tell except by taking sections of the trees.

Q. 26. That is what I mean.

A. We took one yesterday on Little Fightingtown Creek near Quintrell's saw mill north of Flat Top Mountain.

Q. 27. What did you find from that?

A. We found some eight trees, pinus echinata, the short leaf pine, we cut the stumps where we found them, we were interested to find out the diminution in the growth. We took exact measurements of the growth of these trees beginning for the past seven years, then for the previous seven years, then for the growth of the last seven. This was taken in four quadrants in each tree, and they were computed on the average growth and it has been submitted by Mr. Clarke.

Q. 28. Does this effect which you have described come from the injury of the leaves?

562 A. It comes both from acute injury and chronic injury, it may also come from what we call invisible form of injury.

Q. 29. That is caused by what?

A. Interference with the growth of the tree by sulphur dioxide.

Q. 30. Do you find that existing not only in trees which shed their leaves but also in conifers?

A. We find it existing in all kinds of trees. The conifers will show that condition.

Q. 31. How does this prevent assimilation?

A. In conifers the sulphur dioxide affects the starch production. In the first it affects the direct production and in the second place it interferes with the dissolution of the starch in the fall. Both conifers and deciduous trees in the fall dissolve the starch in the leaves and take up all of that in the winter. Where the tree is healthy in the early spring there is no starch in the leaves, and you will find in smelter regions where Si02 is in the smoke this starch dissolution is interferred with and the leaves are injured, and the trees are injured. They carry the starch past the period where they normally carry it and is unable to use it.

Q. 32. And injures the leaves on the gree- trees?

A. Yes sir.

Q. 33. Does that interfere with the assimilation of the starch in the leaf of the tree?

A. It does.

Q. 34. Where does the tree obtain nutriment for its growth?

A. From the leaf, obtains sap and mineral solution from the soil and from the air they build up the other constituents.

Q. 35. Then in the coniferous trees, even though they retain

their leaves, if the assimilation is interferred with the growth of the tree is retarded as if the leaves had shed off?

A. Exactly, in fact, it is more injurious if the leaves stay on the same in winter as in summer.

Q. 36. What is the effect of sulphur dioxide in the color of trees, grass and corn?

A. In the acute form of injury, it is a brown, then later on, it affects it until finally it is almost white.

Q. 37. Have you had much experience in the the taking of sections?

563 A. I have taken many sections, thousands of them at least in my work around Anaconda. I have taken sections in healthy forests around Leadville, Colorado.

Q. 38. Have you or not examined the sections introduced by Mr. Clarke?

A. Yes sir, I took the measurements and Mr. Clarke noted them down and figured the tables.

Q. 39. Have you examined the sections introduced by Frank Shippen?

A. I have.

Q. 40. Could you state whether or not those sections show a restriction of growth for the past seven years?

A. In general they do.

Q. 41. Show a restriction?

A. Yes sir, greater than normal in the past seven years. All trees are restricted in growth as they grow older.

Q. 42. That is what you call a normal restriction?

A. Yes sir.

Q. 43. This you say, was greater than normal?

A. Yes sir.

Q. 44. Now, Doctor, taking the section that Mr. Clarke introduced, state whether or not an Intrement Borer would show with a core from that tree the relative growth of the tree all the way around for any two successive years?

A. It will not for any two successive years.

Q. 45. Then is or not the Intrement Borer an accurate method for determining the growth of a tree?

A. It is not.

Q. 46. Are you familiar with the Intrement Borer?

A. I am.

Q. 47. Have you had experience in buying them?

A. Yes sir, I purchase them, that has been in my charge from our office.

Q. 48. What is the borer used for in your department?

A. It is used mainly in determining the growth of young trees where we didn't want to cut them down. When we want to get the growth of mature trees, we generally work in lumber regions, but in young trees we use it to find out how old the tree is, or get the rate of growth of any two successive years.

Q. 49. What is the method you use in the forest service in determining the relative growth?

564 A. I cannot speak for that office.

Q. 50. Well, in your pathological department, the method for determining the annual ring growth, do you take cores for the Intrement Borer or take sections?

A. We take several sections in a tree, where we make a study of them.

Q. 51. Have you had any occasion in your service with the Government to make a study of the diseases of trees?

A. That is my business.

Q. 52. Have you studied diseases known as chestnut blight?

A. I have not gone into an intense form of the study. I have directed the work, been in charge of the office and directed the men who are investigating it. I have been out in the field and looked over the trees and the general effect on the trees, on several trips, and I have the reports of all the men at work and know the progress of the disease and where it is found, and have men scouting all over the United States to ascertain how fast it is spreading.

Q. 53. You have been in charge of that work?

A. I have been actively in charge at period- ranging from two to four months per year.

Q. 54. State from that investigation of the forests of North Georgia you have found any evidence of the chestnut blight here?

A. I have not found it any further south than Virginia and West Virginia. It has been found in North Carolina nursery, I don't remember which one, but I know it has been found there.

Q. 55. Have you noticed the number of stacks around the Ducktown plant other than smelter stacks?

A. Yes sir, I noticed several of them.

Q. 56. Approximately how many?

A. Oh, I have seen at least five.

Q. 57. Do they emit smoke?

A. Yes sir, usually a black smoke.

Q. 58. If the boilers from which those stacks come burn coal, what would be the effect of the smoke there?

A. It would tend to produce carbon, and also sulphur dioxide.

Q. 59. What effect would the carbon in smoke have on the field of the smoke?

A. The carbon tends to drop before it goes far, the smoke
565 tends to clear itself of the carbon, leaving the sulphur dioxide, which is lighter.

Q. 60. Does it go as far as the sulphur dioxide?

A. The carbon would not, the sulphur wouldn't go quite as far.

Q. 61. If several stacks were producing sulphur dioxide in addition to the furnace stacks, would that tend to increase or decrease the amount?

A. It would tend to increase it in proportion to the sulphur dioxide turned out.

Q. 62. Would it add to the fumes sent out by the furnace stack?

A. It would.

Cross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. Doctor, I believe you have stated before you were not a chemist?

A. I am not a professional chemist, I have had three years' training in the University.

Q. 2. You say that carbon dioxide is lighter or heavier than sulphur dioxide?

A. I didn't say anything about carbo- dioxide.

Q. 3. What were you talking about?

A. Soot, carbon, ordinary soot. That is one of the common terms.

Q. 4. Then soot is heavier than sulphur dioxide?

A. It is heavier than sulphur dioxide.

Q. 5. How much?

A. I don't know, I know it is heavier.

Q. 6. What makes you think it is?

A. I know the atomic weight.

Q. 7. What is it?

A. I don't know exactly, I know that soot is a mineral combination and no gass I know of is as heavy as mineral.

Q. 8. You think the soot filters out of the smoke?

A. Yes sir, drops out of the air.

Q. 9. Have you not seen columns of coal smoke floating in the air for miles and miles and miles?

A. I have seen the residue of the smoke float for miles
566 and miles, I have made some observations on soot.

Q. 10. You have been in Pittsburg-?

A. I have been there, but never made any study in there.

Q. 11. You know around Pittsburg- for twenty miles you can hardly see the sun on a bright day?

A. I know it is smoky.

Q. 12. That is on account of the soot from coal smoke?

A. I know it is largely soot.

Q. 13. That is so in all manufacturing cities of the country?

A. Yes sir, soot is very prevalent.?

Q. 14. That is so around switch yards?

A. Yes sir.

Q. 15. You know that there is some sulphur dioxide in all coal smoke?

A. Yes sir, most of the coal contains sulphur I understand.

Q. 16. When you came here from Washington, you came through tunnels?

A. Yes sir, I coughed too.

Q. 17. It always does make you cough?

A. I never go through one unless I have to.

Q. 18. Is not that the same sort of sensation you have when you come in contact with the sulphur dioxide here?

A. It don't come in such intense form here as in that tunnel.

Q. 19. You wouldn't — to stay with it,—don't the Baltimore tunnel have something like the same effect?

A. It does.

Q. 20. Did you ever experiment with sulphur dioxide?

A. Not directly.

Q. 21. Do you know the specific gravity as compared with air?

A. I don't know it exactly.

Q. 22. Did you ever see it?

A. Well, in making it, it is really visible in one form, I have made it.

Q. 23. As a matter of fact is it not an invisible gas?

A. That is largely so, it makes a haze in the air.

Q. 24. A kind of dim haze?

A. In sufficient strength it produces a haze.

Q. 25. Have you ever analyzed the smoke that comes out of these furnaces?

A. No sir.

567 Q. 26. You don't know what the contents of it is?

A. I know nothing except from reports.

Q. 27. You have seen smoke and know its appearance?

A. Yes sir.

Q. 28. You stated it has the color of fog?

A. It is a bluish color, somewhat like the color of fog.

Q. 29. Do you know what causes that bluish color?

A. Exactly, sulphur I suppose.

Q. 30. Don't you know that is not right?

A. I would lay it to sulphur.

Q. 31. Don't you know there is zinc in that ore?

A. I don't know it.

Q. 32. Don't you know when there is zinc in the air that it produces a bluish color?

A. It produces a white formation.

Q. 33. It is not a bluish formation?

A. Not if I remember what I have seen, the formation is more white.

Q. 34. But you will not swear about that?

A. Yes sir, I will swear as far as I remember and to the best of my knowledge zinc is white, I swear positively.

Q. 35. Do you swear that oxide of zinc is white?

A. I have seen zinc formation.

Q. 36. Don't you know the formation produced by zinc is blue, and is it not a fact that the blue appearance in this smoke comes from zinc in the ore?

A. I don't know.

Q. 37. You have talked about this disease, fung-us disease in the chestnut, as a matter of fact, that disease has never come into North Georgia, is that true?

A. No sir.

Q. 38. You have talked about your boys scouting for fungus disease in chestnut, your boys never scouted in North Georgia, is that true?

A. No sir.

Q. 39. What boys were they?

A. I would have to have the record made by them on the trip, made by the men.

Q. 40. As a matter of fact you don't know whether they have been here?

568 A. I have Prof. Battle and Prof. Shell, I have their reports of having been here.

Q. 41. Whereabouts?

A. I don't know the exact points, I know three of them have been down here.

Q. 42. You don't know where they went?

A. I know they were in North Georgia.

Q. 43. You don't know whether they were in Gilmer or Fannin County?

A. I don't know what County they were in, I don't carry those things in my mind. Last year I had over fifty men out in the field.

Q. 44. In regard to these blocks present here, take the one present by Mr. Clarke, is it not a fact that if you take the Intrement Borer and bore into that block from any point, that it will show for the last seven years that the growth of that tree was less than for the previous seven years?

A. I think it will for seven years.

Q. 45. So, in that respect, that is so far as the growth is concerned, the Intrement Borer will give a substantially true showing of the tree, regardless of the point where it is inserted?

A. No, I wouldn't say it that way.

Q. 46. What way would you say?

A. I can say that for the larger number of rings the nearer it would approach accuracy and the smaller number the further away it would be.

Q. 47. With a good interment borer, can you go to the heart of the tree?

A. Yes sir, you could?

Q. 48. What Intrement Borer do you purchase for the Government?

A. We buy the Swedish make now, I don't remember the name.

Q. 49. How long have you been using that?

A. Fro the last two years.

Q. 50. Mr. Clarke, knew nothing about that, that is to say he never used that borer, when he was using them youn bought other makes?

A. Used the Pressler, I presume.

Q. 51. That is not as good as the other?

A. If I remember right it was not.

569 Q. 52. You did try to use the pressler yourself?

A. We tried to and it wasn't a satisfactory borer. It does good work but not so far as getting the core out.

Q. 53. Didn't you say you couldn't tell the direction of the way the tree was growing, a section taken out by the Intrement borer, provided the bark was knocked off?

A. I said you couldn't be certain as to what part of the tree—couldn't be certain as to whether it was the outside or middle. Some trees have very large soft grain and you couldn't be certain as to what part of the tree the bark was on?

Q. 54. Don't you know the spring growth and the fall growth?

A. Oh, yes, you can tell in conifers which is the spring growth and fall growth.

Q. 55. Can you tell that in any kind of tree?

A. Well, you have to have experience, I could learn to tell in any kind of tree, I have not had experience with all kind of trees.

Q. 56. Anyway, if you develop,——

A. I wouldn't make statement of that kind until I was satisfied from the kind of tree.

Q. 57. The rings in a tree are larger for the first year are they not, and then gradually decrease?

A. Not always.

Q. 58. Is not that the general rule?

A. The very early growth is short.

Q. 59. Is it not the general rule for the early years, that the growth for the early years, except the first two or three years, are the larger growth?

A. Only in open forests, not in crowded forests. Most forests are crowded.

Q. 60. Don't about all of the samples filed show that the early years are the larger growth?

A. I don't know.

Q. 61. Look at that section filed by Mr. Clarke, what does that show with respect to the first year or two?

A. This shows an increased growth after the tree was probably ten years old, on up to,—I will have to count,——

Q. 62. Just guess at it?

570 A. It shows a slight increase after a few years and then decreased.

Q. 63. You stated on your examination in chief the general rule was when a tree got larger the rings were smaller?

A. Approaching maturity it is that way.

Q. 64. The first trip you made was in Tennessee?

A. Yes, sir.

Q. 65. You didn't examine any timber or forests on that occasion that was in Georgia, on the third trip?

A. Yes, sir, I was through Georgia forests part of the way.

Q. 66. How much?

A. Going to Cisco. I passed through Georgia forests, we went on Big Frog Mountain and off into Georgia, really about the only time I was in Georgia was on the trip to Cisco to take the train.

Q. 67. I believe you stated on your other examination you didn't regard Hasslouf and Lindal as very high authority because neither one of them were botanists?

A. I don't think I said that.

Q. 68. What did you say?

A. I said as chemists they were good authority, but I don't so consider them as botanists.

Q. 69. What was Lindal?

A. He was a botanist.

Q. 70. Look at his work, and the work of those two men, and state if it is not a fact, that he was an instructor in botany and curator to the Botanical Museum?

A. Yes, sir, Lindal was, as a systematic botanist, he has a good reputation.

Q. 71. Do you think he don't know anything else?

A. No, sir, I don't say that, he is a highly respected man.

Q. 72. I believe there have been quite a lot of samples shown here of reputed smoke injury, have there not?

A. Not many, outside of what I collected.

Q. 73. Has not Mr. Vestal brought to you a whole suit case filled up with specimens?

A. No, sir.

Q. 74. A great many?

A. No, Mr. Vestal didn't bring me any at all.

Q. 75. Who did?

A. I have had a few specimens handed me, I don't remember who handed them to me. I saw Mr. Vestal's specimens at his place.

571 Q. 76. You examined quite a number there?

A. About half a dozen. They were all smelter injury so far as I could see.

Q. 77. Now, if a tree shows no appreciable retardation of growth, then it has not been injured either chronically, acutely or invisibly?

A. How is that?

Q. 78. If a tree shows no appreciable retardation of growth, then it has not been injured, either chronically, acutely or invisibly?

A. It would be hard to say.

Q. 79. If it has not been retarded in growth, it has not been hurt?

A. I never know how much it would have grown had it not been slightly injured, if I could tell how much it would have grown without injury, then I would know.

Q. 80. If the gro*tw*h appears to be absolutely normal,——

A. If the tree is growing rapidly I would say it had very little injury.

Q. 81. If growing normally?

A. If it was growing normally or rapidly and in good condition.

Q. 82. So if a tree has a healthy growth and continues to have, would you say that tree had any injury?

A. If the tree is healthly and growing well, and I see no sign of injury, I would say it was a healthy tree, so far as I could see.

Q. 83. Suppose you didn't examine the roots or branches, but cut out sections and see that the growth has been normal and healthy, would you judge that has been a diseased tree?

A. I couldn't say, there might be some disease and still show that.

Q. 84. You wouldn't diagnose it as a diseased tree?

A. No, but that I could not see it was diseased.

Q. 85. Would you swear to the best of your judgment that it had been a tree in normal condition and not diseased?

A. I would refuse to swear, I would have to see the whole tree before I would swear about it.

Q. 86. Anyway, so far as the growth of the tree is concerned,——

572 A. I would want to see above the ground at least,——

Q. 87. But so far as the growth of the tree was concerned would you swear it had been retarded?

A. I wouldn't swear it was not, unless I knew all the conditions aside from the smelter smoke. There might be other conditions.

Q. 88. So it is that when a tree shows absolutely normal growth and you have no evidence except the growth of the tree, you would refuse to swear that tree had not been injured?

A. I would refuse to swear what might have happened during the lifetime of the tree.

Q. 89. Wouldn't that be owing to whether the copper company called you or the State of Georgia called you?

A. It would not, and I object to the insinuation.

Q. 90. Have you not sworn to a great many things that is more unreasonable than that testimony would be?

By COUNSEL FOR PLAINTIFF: We except to the question as argumentative, irrelevant and immaterial.

Overruled. Appeal prayed and granted.

A. (No answer.)

Q. 91. I show you Exhibit No. 9 filed by you, does not that show the growth for the last year was not injured?

A. All those specimens show that the leaves were injured.

Q. 92. I am talking about the growth for 1913.

A. It has but one year's growth there.

Q. 93. Do you mean to swear that does not indicate, the last year's growth too, as well as this?

A. Yes, it is this year's growth from here up, here is the previous year's growth.

Q. 94. That is what I am talking about.

A. Part is there.

Q. 95. Well, the part that is shown there, shows that during that season it was not injured?

A. Possibly not acute injury, they are a little chloratic.

Q. 96. That is because you cut them off, they begin to dry up, is not that the reason?

573 A. No, sir.

Q. 97. You think that cutting the twigs entirely off and separating them from the source of nourishment wouldn't injure them at all?

A. No, sir, they dry up to- quickly to show anything of that sort, this dried very quickly, if it had dried slowly it would yellow.

Redirect examination.

By Counsel for Plaintiff:

Q. 1. I will ask you from that sample which was introduced by Mr. Clarke, the growth for the past seven years, those rings have been what you denomiate as normal growth?

A. No, it has not, below what I would expect in this species of trees, especially if it had been growing rapidly in the past.

Q. 2. When at maturity you say the rijgs become smaller?

A. Yes, sir.

Q. 3. State whether or not those rings have become normally smaller, or subnormally or abnormally?

A. Leaving aside the term subnormal, I would say they are smaller than I would expect to find at this age as compared with the previous growth of the tree.

Q. 4. The tree from which this sample was taken was a mature tree?

A. It is not, it should not be at that age, it may be approaching what we would call premature maturity, premature death, in other words.

Q. 5. Nowm this sample here, you say a core taken with an intrement borer will show a restriction of growth for the past seven years?

A. Yes, sir, shows average restriction, not uniform but irregular.

Q. 6. Could you take this sample and bore in at this point for instance, the last ring is wider than the previous ring, and this point, where it is narrower than the previous year's ring, and say from the borings taken what was the growth, tell the correct growth for the previous year?

A. No, you could not, no two rings are uniform.

574 Q. 7. Could you go in at any one point here and undertake to say that the growth had increased in 1907, a little more in 1909 and more in 1910 up to the present time, in that tree?

A. Yes, sir.

(It is stipulated between Counsel for plaintiff and defendant that the map introduced by Mr. Clarke as Exhibit No. 2, the green and red lines thereon, have nothing to do with the issues involved in this case, merely indicating the area in which the Government is contenplating the purchase of lands in what is known as the Cherokee area, and it is not introduced for the purpose of showing distances.)

The next witness, J. H. SETZER, having first been duly sworn, testified as follows:

Direct examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. What official position do you hold in this county?
A. Deputy Sheriff.
Q. 2. How old are you?
A. Fifty-six years old.
Q. 3. Where do you live?
A. Epworth.
Q. 4. How long have you been living there?
A. Going on six years.
Q. 5. How long have you lived in Fannin County?
A. About eighteen years.
Q. 6. What business are you engaged in?
A. Blacksmithing mostly, I farm some.
Q. 7. Have you ever been up around the Ducktown and Copperhill furnaces?
A. Yes, sir, been there several times.
Q. 8. Have you ever seen the smoke coming from those plants?
A. Yes, sir.
Q. 9. Have you ever seen or smelled the smoke in your neighborhood where you live?
575 A. Yes, sir.
Q. 10. How does it smell and look as compared to the smoke you saw there at the plants?
A. About the same.
Q. 11. Have you ever noticed how it is when you see the smoke on the mountains or in the coves?
A. How is that?
Q. 12. Have you ever noticed in particular the timber when you saw the smoke on the mountains and in the coves?
A. Yes, sir, I have noticed it.
Q. 13. Have you ever examined the crops and timber shortly after you saw the smoke there?
A. Yes, sir.
Q. 14. What condition would you find them in?
A. Find the crops bit and the leaves bit up.
Q. 15. Now, what do you mean by that, what is the appearance of the leaves?
A. Crisped up, crisped up like it was scorched.
Q. 16. Does that condition exist in the leaves of the trees?
A. Yes, sir.
Q. 17. Have you ever been up on a high ridge or hills or mountains around your place?
A. Yes, sir.
Q. 18. Looking over into Tennessee?
A. Yes, sir.

Q. 19. State whether or not you have ever seen the smoke coming from that direction?

A. Yes, sir, I have seen it at different times.

Q. 20. Have you seen it come from the Tennessee plant at Copperhill?

A. Yes, sir.

Q. 21. Have you ever seen it coming from the Ducktown Copper Company's plant?

A. Yes, sir.

Q. 22. Have you watched that smoke?

A. Yes, sir.

Q. 23. Where would it go?

A. Come across toward Georgia, toward Epworth.

Q. 24. Have or not you ever seen it settle down around those places?

A. Yes, sir.

Q. 25. What has been the conditions of the crops and timber the past few years?

A. Well, it has been pretty bad.

Q. 26. Do you remember any dates in this year that you have seen the smoke?

A. Yes, sir, it was over there on the 3rd of July. One
576 date, and then it was there about, before that, about the 8th and 10th of June.

Q. 27. Of this year?

A. Yes, sir.

Q. 28. Did you notice any effect from the smoke you saw there on those occasions?

A. Yes, sir.

Q. 29. Describe that?

A. I saw it where it bit the corn and beans, where it crisped them up, and killed the potatoes.

Q. 30. How long after the smoke was there did you notice that?

A. The next day.

Q. 31. How long was the smoke in there?

A. Why it had settled in there in a day, sometimes 9 and 10 o'clock and stay until 2 or 3 o'clock, sometimes, I wouldn't notice exactly when it would go out.

Q. 32. Stay there several hours?

A. Yes, sir, several hours?

Q. 33. You say it killed your potatoes?

A. Yes, sir.

Q. 34. What appearance did the leaves of the potatoes have then?

A. Crisped up and dying.

Q. 35. Did you go into the forests and woods at that time?

A. Yes, sir, I have been around in the forests around Epworth, never been out in the mountains at that time.

Q. 36. What appearance did the leaves have at that time?

A. Browned with smoke.

Q. 37. Do you remember any other dates when the smoke was over there, this year or last year?

A. Well, it was there, I don't remember, I had a crop planted on J. P. Quintrell's place in 1913.

Q. 38. Have you seen Mr. Quintrell here in the courthouse?

A. Not J. P. Quinterll.

Q. 39. Have you seen his brother?

A. Yes, sir, and on the 11th of May, and the 12th it bit my corn and beans and potatoes.

Q. 40. Now about the 11th or 12th of May, had you just come back from a trip at that time,—you were a witness in Mr. Vestal's case?

A. No, I was not a witness.

577 Q. 41. Have you ever been a witness for him?

A. I was on the first trial.

Q. 42. Were you on the last trial?

A. In December, November or December last, 1913.

Cross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. You have talked to Mr. Vestal about this case, have you not?

A. No sir, not,——

Q. 2. Never said a word to him about it?

A. Have met him and talked about it some.

Q. 3. You live near him?

A. Yes sir, close by.

Q. 4. He never mentioned the matter to you?

A. Never said much about it to me no way.

Q. 5. He is sitting and telling the counsel what to ask you?

A. I don't know what he is telling.

Q. 6. You saw him whispering to the lawyer?

A. Yes sir.

Q. 7. You was his witness in the Federal Court?

A. Yes sir.

Q. 8. At the time the jury decided against him?

A. Yes sir.

By COUNSEL FOR PLAINTIFF: We except to that, that is a record and it would be the best evidence.

Q. 9. You say you saw smoke in there on the 11th and 12th of May, 1913?

A. Yes sir.

Q. 10. How do you remember those dates?

A. The way I know it was that date, they said that it was said that the Tennessee Copper Company was shut down, and had cut off their gas.

Q. 11. But it had shut down long before that?

A. I don't know exactly that it had shut down at all.

Q. 12. You understood they had shut down long after that time?

A. I don't know how long.

578 Q. 13. But you fix the dates on the 11th and 12th?

A. Yes sir.

Q. 14. As a matter of fact somebody has told you to swear that?

A. No sir, they never told me about it, I had a crop and I went to Mr. Quintrell after that and suggested plowing up the corn and planting it again.

Q. 15. Do you know what day you planted your crop?

A. The 26th day of April.

Q. 16. How do you know that?

A. I know because I was going to work it over.

Q. 17. On what day did you work it over?

A. I commenced working on it along that week, about the 13th or 15th.

Q. 18. On what day did you give it the first working?

A. That is the day, in May.

Q. 19. You planted it the 26th day of April?

A. Yes sir.

Q. 20. And you was going to work it two or three days after this?

A. No sir.

Q. 21. Did you set down in a column when you were going to work it?

A. No sir.

Q. 22. Did you set down when you planted it?

A. I generally know when I plant anything.

Q. 23. When did you plant your potatoes?

A. I planted them along the first of April or the last of March.

Q. 24. What date?

A. I couldn't say exactly what date. I planted it the first days of April.

Q. 25. I am talking about the potatoes this year, the ones that got killed. when did you plant them?

A. Along the first of April.

Q. 26. What day in April?

A. I couldn't say just what day.

Q. 27. Why is it you cannot remember what day you planted your potatoes when you can remember when you planted your corn?

A. I know just when I planted it, because I made a calculation when I was going to work it over.

Q. 28. You made your calculations that you were going to work it on the 13th day of May?

579 A. About that time, I had to hire a good deal of work.

Q. 29. Why did you fix that particular day to work your corn before you planted it?

A. I didn't fix exactly that day.

Q. 30. Do you always plow your corn over, and plant it on the same day?

A. No sir, not every time.

Q. 31. When did you plow it the third time?

A. Three weeks after that, I plowed it every three weeks.
Q. 32. How many times did you plow it?
A. Three times.
Q. 33. Well, now coming to these potatoes killed in 1914, I believe you say you planted them about the first of April?
A. Yes sir.
Q. 34. And they were killed about what day in June—8th 9th or 10th of June?
A. About then, one patch was bit then.
Q. 35. Bit pretty badly?
A. Yes sir, pretty bad.
Q. 36. That was what day in June?
A. It was,—on,—when they got bit?
Q. 37. Yes sir.
A. July 3rd.
Q. 38. You swore a while ago they got bit the 8th and 9th of June?
A. They were bit some.
Q. 39. How did you happen to remember that date?
A. I made a report.
Q. 40. What for?
A. Damage.
Q. 41. You didn't ask for damage for those po*at*toes in June, they were not bit much in June?
A. I made out a report anyhow.
Q. 42. How much did you claim damage in June?
A. I don't remember just how much I did put in.
Q. 43. You remember the date, now why can't you remember how much you claimed damage?
A. I put in for several years, for corn, peas, tomatoes and potatoes.
Q. 44. And they were all bit in June?
A. Some were bit in June and some in July.
Q. 45. I am talking about this June biting, how much was the total damages you claimed?
580 A. Fifteen dollars I believe.
Q. 46. You can't tell how much was for potatoes and how much was for beans?
A. I think I did.
Q. 47. Have they allowed it yet?
A. I couldn't *v* tell you.
Q. 48. Have they been there to look at it?
A. Yes sir.
Q. 49. Have you put in any claim for damages in July?
A. Not yet.
Q. 50. You are going to?
A. I am not going to put in any more.
Q. 51. Not going to claim any damages for July, but are claiming damages for June?
A. I claim I was damaged in June and I claim I was damaged in July

Q. 52. But you are not going to put any claim in for July?
A. I let my time run out.
Q. 53. What did you let your time run out for?
A. I neglected it.
Q. 54. Didn't you pay enough attention to it to remember it within fifteen days?
A. Yes sir, I could have if I had wanted to.
Q. 55. You just didn't want to. Do you live on adjoining farm to Chastain?
A. No sir.
Q. 56. How far do you live from him the man that had the bumper crop of corn?
A. I couldn't say how far, we both live in the corporation.
Q. 57. About how far?
A. About half a mile.
Q. 58. Now, you spoke about having some things scorched on Quintrell's place?
A. Yes sir, J. P. Quintreel, or Joe Quintrell.
Q. 59. That scorching took place in May last year?
A. 1913, in May.
Q. 60. Did you put in anything for that?
A. No sir.
Q. 61. The only thing you ever put anything in for is damage that occurred in June this year, is that right?
A. No, I put in in full, peas beans and corn, I replanted.
Q. 62. Was that last fall?
A. Yes sir.
Q. 63. How much damage did you claim then?
A. I think about thirty or thirty five dollars.
581 Q. 64. How much did they pay you?
A. Thirty or thirty-five dollars.
Q. 65. You got it all?
A. Yes sir.
Q. 66. They allowed you everything you put in for?
A. Yes sir.
Q. 67. Everybody else must have been paid off?
A. I don't know whether they were or not.
Q. 68. How close do you live from Willis Gillen?
A. Four miles.
Q. 69. Did you notice anything about his crops?
A. No sir.
Q. 70. Did you notice any crops he had at all?
A. No sir.
Q. 71. You cannot see good crops?
A. I have not been up that road.

(This witness traveled twenty miles in coming to Blue Ridge and return home.)

FRANK SHIPPEN, recalled for further cross examination testified as follows:

By General FOWLER:

Q. 1. Is this a copy of the agreement which you mention as having been entered into between the Tennessee Copper Company and the Shippen Bros. Lumber Company?
A. It is.
Q. 2. Please file that as exhibit No. 1 to your cross examination.
A. I do so.

Mr. HILL: We except to all of the questions and answers as to any agreement entered into between the Shippen Bros. Lumber Co. and the Tennessee Copper Company because immaterial and irrelevant to the issues involved in this case, and further upon the ground that the same is incompetent, immaterial and irrelevant for the reason that the same is evidence on behalf of the defendant.
582 and under the order of this court, the time for the taking of evidence by the defendant has *fired;* further, because the document sought to be introduced is not complete within itself, but refers to another document as a part thereof, and for this reason is incompetent, immaterial and irrelevant.

The next witness, W. H. CARVER, having first been duly swo-n, testified as follows:

Direct examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. How old are you?
A. Forty eight years old.
Q. 2. Where do you live?
A. I line in Fannin County.
Q. 3. Whereabouts?
A. Near Medola, Georgia, in the northwest part of Fannin County.
Q. 4. About how far from the plant of the Ducktown Copper Company?
A. I would suppose about six miles from the Tennessee Copper Company and something like eight miles from the Ducktown Copper Company.
Q. 5. Did you ever hold any official position in this County?
A. Yes sir.
Q. 6. What was that?
A. Tax Receiver.
Q. 7. How long?
A. Four years, two terms.
Q. 8. Mr. Carver, have you ever been around the Ducktown Copper Company's plant and the Tennessee Copper Company's plant?
A. Well, not very much of late years.
Q. 9. I mean have you ever been there where you could see and smell the smoke?
A. Yes sir.

Q. 10. Have you ever seen any smoke around in your section of the County?

A. Yes sir.

Q. 11. Did you smell it?

A. Yes sir.

583 Q. 12. State whether or not is the same and has the same appearance and odor as the smoke you saw and smelled around the plants?

A. Yes sir, the same smoke coming from the plants, I have been there enough to know that.

Q. 13. Have you seen it this year?

A. Yes sir.

Q. 14. How often?

A. I have been seeing it pretty often, I don't know just how often.

Q. 15. How does this year compare with previous years?

A. It has been worse this year than common, been worse at my place than it has been since I have lived there, sixteen years.

Q. 16. Have you noticed it on any particular day?

A. Yes sir.

Q. 17. Just what day was that?

A. The 3rd of July.

Q. 18. How do you remember that date?

A. Well, my folks were preparing to go to a picnic on the 4th of July, they were in the kitchen cooking for that purpose, and a neighbor of mine was setting on the porch and we saw the smoke from the plants and made mention of it on that day.

Q. 19. Have you ever examined the timber and crops a short time after you have seen the smoke in there?

A. Yes sir.

Q. 20. What would be its condition?

A. It would be scorched up, as a general rule when the smoke is strong.

Q. 21. Did it have any effect on anything around your house on the 3rd of July?

A. Not at my house, the smoke was very little there at my house, it was going around that mountain, struck across going around in here (indicating) it didn't reach up to my house much.

Q. 22. Has it ever affected anything of yours?

A. Yes sir.

Q. 23. What?

A. My potatoes and beans and corn, most everything.

Q. 24. How would it do that?

A. Brown them up, ruined my potatoes this year.

Q. 25. Have you noticed the forests and timber?

A. Yes sir, dead timber around there. It is dead.

Q. 26. What is the condition of things now, generally, as compared with five or six or seven years ago?

584 A. They are a little worse right in there than they was then.

Q. 27. Have you ever been on any of those high mountains around your house?

A. Yes sir.
Q. 28. Have you ever seen the smoke coming over there?
A. Yes sir.
Q. 29. From what plant?
A. I have seen it from both.
Q. 30. Have you ever seen it coming from the Ducktown Copper Company's plant?
A. Yes sir.
Q. 31. Where was it going to?
A. Coming over in Georgia.

Cross-examination.

By COUNSEL FOR DEFENDANTS:

Q. 1. How was the smoke last year?
A. Well, not so bad last year as this, hardly any timber affected about my place last year.
Q. 2. During all of last year, not so much?
A. Not so much, but nothing like it was this year.
Q. 3. How was it year before last, 1912?
A. Well, about equal to last year.
Q. 4. That is very little timber affected in 1912?
A. Not right in there at my place, not but very little.
Q. 5. How was it in 1911?
A. It wasn't so very bad.
Q. 6. How was it in 1910?
A. It was pretty bad.
Q. 7. In 1909?
A. It was bad in 1909.
Q. 8. How was it in 1908?
A. My recollection is it wasn't quite so bad.
Q. 9. How was it in 1907?
A. I don't remember about 1907.
Q. 10. As a matter of fact along about then was when it commenced to get bad?
A. In 1907,——
Q. 11. In 1906 and 1907 was the years it commenced to get bad?
A. My recollection is it commenced to kill stuff there about that time.
Q. 12. About 1906 or 1907?
A. That is my recollection.
585 Q. 13. Then it was pretty bad for some years, and you say in 1911, 1912 and 1913 it didn't affect the timber so much?
A. It wasn't so bad in 1911-12 and '13.
Q. 14. But this year it was worse than during those three years?
A. Yes sir, as bad as it was in 1910, anyway, and 1909 and I believe it is a little worse than then. I know it hurt our crops worse than then.
Q. 15. You live at Medola?

A. Yes sir, about two miles.
Q. 16. That is further away from the furnaces than Epworth?
A. Yes sir.
Q. 17. About how much further?
A. I hardly know, I live west of Epworth.
Q. 18. Were you a witness down at Chattanooga?
A. Yes sir.
Q. 19. In December?
A. Yes sir, last December.
Q. 20. The time the case was tried there before a jury?
A. Yes sir.
Q. 21. You testified in the case at that time?
A. Yes sir.
Q. 22. Of course, you didn't testify the same as you have here because things have happened since?
A. I didn't testify about things in this year.
Q. 23. You had a very bad drought this spring and summer?
A. Had a reasonably dry summer.
Q. 24. Didn't you have a drought of six weeks, up until after the first of July?
A. No, we wasn't six weeks without rain.
Q. 25. You had a very dry summer up until the 5th *of* 6th of July anyway, somewhere there?
A. Yes sir, it was pretty dry.

Redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. Are you generally familiar with conditions around there?
A. Yes sir recently.
Q. 2. That is why you testified as a witness for Mr. Vestal?
A. Yes sir.
Q. 3. Did you or not notice your son-in-law's garden about then 3rd of July or immediately after that?
A. Yes sir.
586 Q. 4. How about that? And when was it?
A. On the 5th of July. His potatoes were scorched up and the rag weeds were scorched too.

Recross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. You don't mean they were scorched on that day, you mean they had been?
A. On the 3rd, he said.

By COUNSEL FOR DEFENDANT: I ask that that be taken out.

Q. 2. You saw his potatoes on the 5th of July?
A. Yes sir.
Q. 3. They were then scorched?
A. Yes sir.

Q. 4. They were scorched?
A. Yes sir.

Re-redirect examination.

By COUNSEL FOR PLAINTIFF:

Q. 1. Did you see the smoke there on the 3rd of July?
A. Yes sir.

Re-recross-examination.

By COUNSEL FOR DEFENDANT:

Q. 1. You saw smoke there through the whole spring?
A. Yes sir.
Q. 2. All of May, June and July?
A. Yes sir.
Q. 3. And at different times in June?
A. Yes sir, more than one day.

This witness traveled twenty-four miles in coming to Blue Ridge and returning home.

587 In the Supreme Court of the United States.

No. 1. Original.

In Equity.

THE STATE OF GEORGIA, Plaintiff,
vs.
TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED, Defendants.

STATE OF GEORGIA,
Hall County:

GAINESVILLE, GEORGIA, September 10th, 1914.

I, E. B. Kingsbery, the commissioner agreed on by counsel for complainant and the Ducktown Sulphur, Copper & Iron Company, Limited, do hereby certify that the foregoing depositions as contained on pages 1 to 749 inclusive, were taken before me under the consent appearing on page No. 1 hereof, dated July 8th, 1914, and that the witnesses whose names appear in this record were first duly sworn; I further certify that I correctly took down the statements and the evidence of the various witnesses in shorthand and that I have correctly transcribed the same into typewriting from my notes, and I now, in compliance with the consent signed by counsel as aforesaid, and also the consent signed by counsel as appears on page No. 2 of this record, express the record of the testimony of the various witnesses, together with the exhibits to said testimony, same being sent from Gainesville, Georgia, to the Clerk of the Supreme Court of the United States at Washington, D. C.

E. P. KINGSBERY,
Court Reporter and Commissioner.

588 STATE OF GEORGIA,
Hall County:

GAINESVILLE, GEORGIA, Sept. 7, 1914.

I, E. P. Kingsbery, commissioner, before whom the foregoing depositions were taken, do hereby certify that the testimony of the foregoing witnesses was taken down by me in shorthand, and transcribed into longhand, or typewriting accurately and correctly, to the best of my skill and ability.

——— ———,
Commissioner.

589 No. 1. In Equity.

THE STATE OF GEORGIA, Plaintiff,
v.
THE TENNESSEE COPPER COMPANY and THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LTD., Defendants.

Deposition of R. A. Shifflett, taken by agreement between counsel for plaintiff and defendants at Blue Ridge, Georgia, upon adjournment of hearing at Knoxville, Tennessee, in behalf of the defendant, the Ducktown Sulphur, Copper & Iron Company, in the presence of J. A. Drake and Lamar Hill representing the State of Georgia and J. A. Fowler and Geo. H. Hyatt representing the defendant.

R. A. SHIFLETT being sworn to speak the truth, the whole truth and nothing but the truth, testified as follows:

Direct examination.

By J. A. FOWLER:

Q. 1. What is your age, Mr. Shiflett?
A. 52 years.
Q. 2. Where is your residence?
A. Harriman, Tenn. at present.
Q. 3. Have you ever held any official position in Tennessee; if so what?
A. Yes sir, I was chief mine inspector for the State for twelve years.
Q. 4. Under what Governor?
A. Governors McMillan, Frasier and Patterson.
Q. 5. Who appoints mine inspectors in Tennessee?
A. The Governor of the State.
Q. 6. What was your occupation before you became Chief Mine Inspector?
A. Civil and Mining Engineer.
Q. 7. State whether or not you have ever been called upon to inspect large bodies of timber lands?
A. Yes sir. Let me amend my reply to the previous question.

Civl, Mining and Consulting Engineer. A great many in connection with my work in mining development.

590 Q. 8. About when did you first perform service of that kind?

A. I began engineering and surveying when I was seventeen years old, and I have been at it continuously, with probably one or two years' exception. I believe.

Q. 9. I believe that for a time you were a railroad civil engineer?

A. Yes. I am also employed as consulting engineer to examine and report on mining properties and timber properties.

Q. 10. Before you were appointed mine inspector did you or not examine bodies of timber?

A. Yes sir.

Q. 11. What bodies or large tracts of land did you examine before you became mine inspector?

A. In Tennessee?

Q. 12. Anywhere?

A. I examined in my own State, Virginia, large tracts of timber land before I came to Tennessee and located, and in Tennessee after coming to Tennessee, and I examined large timber and coal properties in Knox, Ball and Harlan counties, Kentucky; Whitley County, Kentucky, Anderson County, Tennessee, Campbell County, Tennessee, Claiborne, Fentress, Overton County, Tennessee, White County, Marion County, Tennessee, and numbers of others, I don't recall right now.

Q. 13. What were the purposes of that examination?

A. Some of them for corporations and some of them for companies that were preparing to invest in mining and timber properties to ascertain the value of the property, and whether valuable for mining and timber properties.

Q. 14. Did or not such examinations require and inspection of the timber for the purpose of determining its condition and the amount of timber standing upon the land?

A. Yes sir.

Q. 15. About what year did you make these first inspections?

A. Kentucky or Tennessee?

Q. 16. Anywhere?

A. I have been doing that work ever since I was seventeen years old; I don't hardly know how to answer that, unless I could go back and take up the latter part of my work in Tennessee.

Q. 17. State whether or not you have been examining mining lands for the last thirty years?

A. Yes sir.

591 Q. 18. While you were mine inspector in Tennessee, did you or not make examinations of timber lands from time to time?

A. Yes sir.

Q. 19 Since you went out of office, has or not, the examination of lands been to some extent a specialty of yours?

A. Altogether. My work now is altogether specialty work; that

is the examination and reporting on coal and timber properties; opening up mining properties and as consulting engineer for different companies.

Q. 20. Have you or not done any work of that kind for the Ducktown Sulphur, Copper & Iron Company?

A. Yes sir, I have done considerable inspection work of timber lands for the Ducktown Sulphur, Copper & Iron Company.

Q. 21. When did you first work for that company?

A. (Referring to memorandum book:) I think the first work I did for the Ducktown Sulphur, Copper & Iron Company was in 1909, as well as I recollect.

Q. What was the nature of that work?

A. To go over various tracts of timber in different parts of the country, making a thorough and close examination of the timber as to the character and quality and as to the number of dead trees and the cause of the death of a good deal of timber.

Q. 22. Do you know why they employed you to make that inspection?

A. I think they employed me on account of the fact that I had already made a report of the Ducktown basin in 1898, 1899 and 1900, and I think I was employed from that work.

Q. 23. Was that report which you mention made while you were State Mine Inspector?

A. No, that was made before I was appointed State Mine Inspector. I made that report for some French people it was not completed until 1900.

Q. 24. Why were these French people employing you to make inspection of that Ducktown basin?

Mr. DRAKE: I except to the question as irrelevant. Exception overruled; appeal prayed and granted.

A. I think they were figuring on investing in there.

Q. Did you make inspection of that whole section at their instance?

592 A. As much of it as they wanted done. The work in 1898 was practically confined to the basin; that is my work.

Q. 26. Did that relate wholly or nearly wholly to the mineral resources of the basin?

A. To the mineral resources and also the effects of the smoke on the timber around on the slopes of the mountains, and — 1899 I went outside of the basin; I was out a little further I think, as well as I recollect now, I went over to look at some specimens of — taken from the mine on the South of the Ocowee River, Mine No. 20, and in 1900 I was a little further out from the plants than I ever had been before except in going through; I think at that time I spent a great deal of time in Fannin and Cherokee Counties North Carolina, as well as I recollect now.

Q. 27. Going back to your employment in 1909 by the Ducktown Company, do you know whether or not at that time they had on hand a number of smoke suits.

A. I think so.

Q. Do you know whether or not you were employed in consequence of these cases pending in the courts?

A. Yes sir.

Q. 28. In the mean time between your examination of that section of the country in 1898, 1899 and some later, and your inspection in 1909, had you been through that section?

A. Yes sir, frequently.

Q. 29. Were you through these about the time the Tennessee Copper Company built that high stack, and a while after that?

A. Yes sir, I was in the basin a number of times during 1900, 1901, 1902, 1903, 1904 and 1905, 1906, 1907 and well up until 1914 you might say, as when I was employed as Chief Mine Inspector I was in the basin from two to three times a year; sometimes oftener.

Q. 30. That was for the purpose of inspecting the mine?

A. Yes sir.

Q. 31. Were you through any part of North Georgia just after the construction of that high stack by the Tennessee Company?

A. Yes sir.

Q. *31.* Did you observe the effect of that high stack in disseminating the sulphur fumes, and the effect it had upon the vegetation in North Georgia?

593 A. Yes sir, South of the river I did; it was more noticeable there than anywhere else.

Q. 32. What was the result of the construction of that high stack?

A. It sent the fumes further away; that is a greater distance from the plant.

Q. 33. Now, I wish you would state the extent of your investigations made in 1909 for the Ducktown Company?

A. Without going back to my notes, I can give it to you fairly well.

Q. *34.* I covered all of the basin during that year in my first inspection for the Ducktown Company, and a good deal of the North Georgia territory, Cherokee County North Carolina and a good deal of Polk County, Tennessee, a considerable distance near and a considerable distance away from the plant.

Q. 35. Were you requested to make special investigation of some particular tracts?

A. Yes sir.

Q. 36. Do you remember whose tracts you were specially looking for at that time?

A. in 1909?

Q. 37. Yes.

A. No sir, I don't recall; I could give you my route.

Q. 38. I wish you would state the route you took?

A. Eastwardly from the basin into Cherokee County, North Carolina, a part of North Georgia, and through Gravy Hughes gap to and through all the gaps on the East of the basin, Jellico, let me see Panburry gap, East, Northeast, I went on Little Frog mountain and West of the Little Frog, South of the Ocowee river across and

over the river into Georgia around Pearceville and I should say seven to ten miles from there near the plant, South at that time, in Georgia and Southwest.

Q. 39. Do you remember how much time you spent in the State of Georgia while making that inspection?

A. No sir, I couldn't. I have the number of days I spent in Georgia.

Q. 40. How long did you spend on the whole trip?

A. Twelve days in 1901; eight days in 1902; 10 days in 1903; twelve days in 1904; nine days in 1905; seven days in 1906; eight days in 1907; six days in 1908; four days in 1909; twelve
594 days in 1909 again; eight days in 1909 again; four days in 1910; eighteen days, that is there were two inspection trips in 1912, fourteen days in 1912; six days in 1913; eight days in 1914, fifteen days in 1914 again, and twenty-two days. I don't know what the total is I haven't run it up. These trip- were confined to Polk County, Tennessee, Fannin, Gilmer and Murray Counties, Georgia, Cherokee County, North Carolina; Mitchell and Yancey County in North Carolina; Roane, Overton, Morgan, Fentress Counties in Tennessee. All of these mountain Counties in East Tennessee; all that work was in 1914; that is for the D. S. C. & I. Company.

Q. 41. The days you have mentioned, do they constitute the entire time you have worked making timber inspections at the instance of the Ducktown Company.

A. Yes sir, that is for the Ducktown Sulphur, Copper & Iron Co.

Q. 42. It embraces the inspections you made in other States as well as in Georgia?

A. Yes sir.

Q. 43. When you were first employed by the Ducktown Company in 1909, do the dates mentioned previous to that time, cover the time that was spent in working for some other companies besides the Ducktown Company?

A. Yes sir.

Q. —. Mr. Shiflett, I wish you would state how carefully you inspected lands in North Georgia in 1909.

A. As far as my work in my inspections; they were very thorough and close.

Q. 44. What did you specially observe?

A. It was the timber of course, and the effects of the smoke near the furnaces at that time to the vegetation; the character of the timber; the dead timber, and the condition of the timber generally.

Q. 45. What time of the year was it?

A. I begun in July, I believe in 1909. Yes sir, July, 1909.

Q. 46. The entire inspection was made in that month, was it?

A. Yes sir. Just wait a minute. (Refers to book) Yes sir.

595 Q. 47. What is generally the condition of the foliage of the trees and vegetation in June in North Georgia, and during the month of July?

A. On healthy timber the foliage would be green. In some years

we have had a frost that would injure the *the* timber in May, and June, but I didn't see any evidence of it that year.

Q. 48. What was the condition of the foliage on the timber and the bushes and the vegetation in June while you were on that trip?

A. Outside of the basin it was practically all green. I saw very little effect from the smoke outside of the basin, that is, any distance except South of the Ocowee river and at Fighting Town creek.

Q. 49. I am asking you specially about 1909, I want to take that up separately?

A. At that time the smoke limit had been practically fixed. I located that on the first map I filed in the case and I think I could do it again for you.

Q. —. Did the damages from the smoke, in 1909, extend down into North Georgia?

A. A little, yes sir.

Q. 51. At what points?

A. Down to Epworth and the L. & N. Railroad.

Q. 52. About how large a section did it cover?

A. It was very small; I can't tell just how much, but it was very slight.

Q. 53. Do you know to whose lands these damages were on?

A. At that time I wouldn't except from my guide. When we come into Georgia on that trip we wasn't familiar with the property owners unless we inquired and found out that way.

Q. 54. How far was that from the furnaces?

A. At that time I should say the limit as fixed was about six miles from Ducktown.

Q. 55. How far from the Tennessee plant?

A. About half that distance; about three miles from the Tennessee Copper Company's plant.

Q. 56. Was that the only place you observed damages in Georgia on that trip in 1909?

A. I think so.

Q. 57. Do you know when the two companies, I mean the Ducktown Company, and the Tennessee Copper Company installed their acid plants?

596 A. Let's see, I believe they installed the pyritic system—I have this memorandum here of it. The Pittsburg Copper Company began roasting ore in the open hearth in 1894 and discontinued operations in 1898; part of that is a matter of record. In 1898 the mine known as the D. S. C. & I. Co. began open roasting, and *and* discontinued the open hearth process in 1902 and begun the pyritic process, and the manufacture of sulphuric acid in 1909. The plant was put into operation, as well as I remember, in the early spring; I was there; I don't remember the month of 1909. The Tennessee Copper Company begun roasting ore in 1901, and discontinued that process in 1904; they begun the pyritic system in 1904; the latter part of 1904 or 1905, I have forgotten which.

Mr. DRAKE: I want to enter an exception to all this evidence as having been gone into in the former investigation.

Exception overruled; appeal prayed and granted.

They begun to manufacture acid in 1908 and built their high stack in 1906.

Q. 58. Were you or not Chief Mine Inspector when they put in that high stack?

A. Yes sir; I get this data from my old notes.

Q. 59. When did you make your next inspection of timber through North Georgia?

A. In 1912.

Q. 60. In what month?

A. I think that we begun on the 26th day of September, in 1912.

Q. 61. What was the condition of the foliage at that time; that is was it injured or not?

A. No sir, the condition was all right.

Q. 62. What was the extent of your examination at that time?

A. On that inspection I went over a large territory in North Georgia, in Fannin County, I believe; we went into Fannin, Murray and Gilmer on that trip, I believe; I am not sure however, as to that. Wait just a minute please, I don't want to give you that without referring to my notes (Refers to book) Most of that work was on the Shippen and Vestle property. Of course we went over a
597 great deal of property but our inspection was supposed to cover the Shippen and Vestle lands, as I now recall.

Q. 63. Can you give an estimate of about what sized territory you covered on that inspection?

A. Not without going back to the map, but it was quite an area; we went over a great deal of country.

Q. 64. About how many acres at a guess?

A. I wouldn't want to guess at it; I could give it to you pretty well by the map.

Q. 65. You inspected all of the Vestle lands, did you?

A. All that we knew of.

Q. 66. I wish you would tell in a general way just what localities you visited?

A. Along the head of the Cumberland creek and the territory East of Jack river and West of Jack river as far South as Cherry-Log station down here; that's as far East, I think, that we went on that trip.

Q. 67. Do you know whether or not there was at that time a law suit pending between the Vestle Company and the Ducktown Company?

A. Yes sir.

Q. 68. Were you a witness in that suit?

A. Yes sir.

Q. 69. State whether or not it was for that purpose largely that you made the inspection?

A. Yes sir.

Q. 70. State whether or not you have present a map which shows the various sections of land in Fannin and Gilmer Counties, Georgia, and parts of adjoining counties; and also Polk County, Tennessee?

A. Yes sir, this blue print shows the lands in Polk County, Tennessee; Murray, Fannin, Union and Towns in Georgia, and the prop-

erties of G. E. Wetmore, Paul F. Stephens, J. P. Vestle, J. H. Vestle, Jim Brooks, Tasker, Shippen Bros. and J. H. Ladew; this map, however, does not show all of these properties colored, and before this map is filed, I would like to have the opportunity of coloring these different properties; I wouldn't like to file it as it is.

Q. 71. Whose lands are in colors on the map at present?

A. Those mostly of Shippen Bros are in colors.

Q. 72. Shippen Bros. are here in Georgia, whose are in Tennesee?

598 A. Wetmore and Stephenson.

Q. 73. You haven't located and colored the Vestle lands in Georgia?

—. No sir.

Q. 74. Will you put on the Vestle properties in a bright red and file this map as Exhibit "A" to this deposition?

A. Yes sir.

Q. 75. Will you also put in different colors the lands belonging to the other parties you have named, which are not now shown?

A. Yes sir.

Q. 76. You say that in 1912 you were making a special investigation of the Vestle lands?

A. Yes sir.

Q. 77. What portions of those lands did you go over?

A. We went over most of the Vestle property; all that we knew any thing about with the exception of one or two lots.

Q. 78. Who was your guide and gave you information as to the owner of any special lands?

A. Mr. Higdon was one of our guides, and Sherman Reese who we thought was familiar with the property was also one of the guides, and we had a surveyor from Georgia down here, I have forgotten his name. Oh yes, Mr. Clayton, the surveyor from Gilmer County, Georgia.

Q. 79. Did you, on that trip, go over any part of Mr. Shippen's land?

A. I think we went over every body's land on that trip.

Q. —. How far South did you go—how far South of the Tennessee line?

A. I don't recall how far South we went. We went as far South as Cherry Log from the Tennessee State line. I could take the Government map and give the distance, if you will take that for it.

Q. 80. Did you inspect all of the lands between Cherry Log and the Tennessee State line?

A. We did; that was our purpose.

Q. 81. I wish you would state what evidence of smoke damage you observed on that trip?

A. I didn't see any outside of the smoke limit; that was all fixed in 1909; it extended very little further in any direction except the lower gaps until the- built the high stack, and then it got a little further South.

Q. 82. That was built in 1906, wasn't it?

A. The latter part of 1905 or 1906; I am giving that data
599 from my records while I was Chief Mine Inspector.

Q. 83. What you mean is the original limit that it extended over into Georgia?

A. Yes sir.

Q. 84. How far into Georgia?

A. I would say not over six miles in any direction from the D. S. C. & I. Company's plant and not as far as that in Tennessee.

Q. 85. How far is the Tennessee plant from the Georgia line?

A. I can't say exactly how far it is. The scale of the Government map shows that it is about three-quarters of a mile.

Q. 86. How far is it from the Ducktown Company's plant to the State line?

A. Taking the Government map for it, it is practically over three miles; about three and nearly a half miles from that to the State line.

Q. 87. In 1912, did you inspect that territory in there which was affected by smoke after the construction of the high stack in 1906?

A. I made the inspection in there in 1912 for the D. S. C. & I. Company, and I was in there previous to that for other parties.

Q. 88. What was the condition of the foliage within that section which had not been previously affected; that part of it in Georgia?

A. There was very little change in it sir; the foliage was green except in a few places where I could see the effects of the smoke coming South, in the low places.

Q. 89. That was in 1912?

A. Yes sir, in 1912, and I was in there in 1910, but not for the D. S. C. & I. Company.

Q. 90. Who others at that time?

A. For some capitalists.

Q. 91. Prospective buyers in that section?

A. Yes sir.

Q. 92. I wish you would explain in detail just where you noticed any visible effects from the smoke in the State of Georgia in 1912, and how close it was to the Tennessee line?

A. In one or two places,—this is approximate now, or an estimate rather, it was, as well as I recall, four or five miles from
600 the river; that would make it, I don't know how far from the Tennessee line.

Q. 93. Please describe the extent of the damage as you observed it at that time?

A. Very slight and the timber that was affected was very scrubby and of no value.

Q. —. How much territory did it cover?

A. Very little; I can't say how much; just in the low gaps around.

Q. 95. Was that on any of the Vestle lands?

A. No sir, I think not.

Q. 96. Was there on the Shippen land, as far as you know?

A. I don't know; there might have been.

Q. 97. What was the character of the timber that was affected?

A. It was very scrubby small timber; there wasn't any merchantable timber affected.

Q. 98. Was the timber absolutely killed or burnt up?

A. No, it was burnt or blackened. I don't think it all occurred at one time. From my ob-ervation on that property it had been in there at different times; at different times the smoke would come in there; there is a difference in the discoloration.

Q. 99. About how many acres do you suppose that you observed that was affected in that way?

A. The area was so small I wouldn't hardly know how to estimate; the area there was very small.

Q. 100. Five acres?

A. I shouldn't think so; I don't believe it would altogether.

Q. 101. How far was that from the Tennessee Copper Company's high stack?

A. I should say about three miles.

Q. 102. How far from the Ducktown stack?

A. About six miles; probably more than three miles from the Tennessee Copper Company's stack.

Q. 103. That was in September, 1912?

A. Yes sir.

Q. 104. When did you make your next inspection for the purpose of ascertaining smoke damage in there?

A. 1913.

Q. 105. What month?

A. I think we begun work on the Vestle lands, as well as I remember, on that trip, on September 9th.

601 Q. 106. How long were you in making the inspection?

A. I think we were fourteen days on that inspection and six days on another inspection, fourteen days in September and in October six days.

Q. 107. How much territory did you cover in September, in North Georgia.

A. I didn't cover a great deal of territory in September 1913. I wasn't very well at the time; wasn't strong enough to go over the territory. I had already been out there before that, and as well as I recall now, and also by referring to my notes, I think the most of my work was with Mr. Chestnut as my guide. He lives on Jack's river and our camp was stationed at that time on Jack river near his farm; that was in Fannin County.

Q. 108. Were you on the Vestle lands at that time, or what lands did you inspect?

A. I wasn't over the Vestle property at that time. I had been over that before.

Q. 109. In previous years?

A. Yes sir. My work then was more to ascertain and make a close examination of the timber, but more to get the condition of the timber than to go over a big area which we did by not having to go a great distance from the camp.

Q. 110. Did you observe any indications of smoke damage during that year or not, in North Georgia?

A. No sir, there never was any smoke from the furnaces in that county.

Q. —. How far were you from the furnaces?

A. (Referring to Map) On an air line about 10¼ miles from the Tennessee Copper Company and practically thirteen miles from the D. S. C. & I. plant. Of course that was our camp, and we worked from our camp a greater distance from the furnaces in there.

Q. 111. What were you doing there in November and December?

A. I wasn't there in November and December.

Q. 112. I thought you said you were?

A. Let me see (refers to memorandum book); I was there Mr. Fowler in October and in November.

Q. 113. Why did you go back there in October and November?

A. To make a very close and thorough examination of the
602 condition of the timber.

Q. 114. What territory did you cover then?

A. I had just gone over that territory, the territory I have you a moment ago near Jack river. I didn't go over the Vestle property that trip, I had ben over it before that.

Q. 115. Did you see any evidence of smoke damage on that trip?

A. No sir. There never has been any smoke in there; smoke can't get there very well.

Q. 116. When did you make your next investigation in Georgia, or was that the last?

A. I think that it is. I don't think I have ever made investigation since that in Georgia, in fact I know I haven't. I have made other investigations, but not in Georgia.

Q. 117. State or not, Mr. Shiflett, you have traveled through a number of counties in Tennesee and some in Kentucky and examined timbers located there and growing there for the purpose of making comparison of the growth of the timber and the condition of the timber in North Georgia and timber in these other sections?

A. Yes sir, I have done that to make comparisons. I have done a great deal of that for corporations and prospective purchasers or parties wanting to sell property.

Q. 118. State whether or not in making these examinations for parties who contemplated making purchases, one of the things especially required of you was to observe the amount of dead timber and diseased timber, and the general condition of the timber?

A. Yes sir, the character and quality of the timber and the condition of the forests.

Q. 119. Did you or not make a trip through a number of counties in Tennessee at the instance of the Ducktown Company?

A. Yes sir.

Q. 120. When was that?

A. February, I think, and March, 1914.

Q. 121. Several persons went along with you?

A. Yes sir.

Q. 122. That the trip Mr. Reese accompanied you?

A. Yes sir and Professor Bain, Mr. Miller and two or three others; I have forgotten some of them, who they were.

603 Q. 123. I wish that you would describe the condition of the timber in North Georgia within the region within which it is claimed that the timber and other vegetation is damaged by this copper plant at Ducktown?

Mr. DRAKE: I except to the question because the witness has not stated that he has examined all of the affected territory in Georgia, and therefore cannot speak with reference to all the affected territory in Georgia. Exception overruled; appeal prayed and granted.

Q. 124. As you found it on the trips you made in 1912 and 1913?

A. Do you mean this inspection of the copper company land, or do you mean my work in other counties?

Q. 215. You made these trips in 1912 and 1913, what was the general condition of the timber at that time?

A. The timber in the mountain section of East Tennessee——

Q. 126. I am talking about in Georgia?

A. Considerable difference—a good deal of difference.

Q. 127. Describe the condition of the Georgia timber, as to the amount of dead timber and the appearance of the timber?

A. The conditions in the territory I have gone over here in Georgia are very much better than we have up in Tennessee; it is far better by a great deal; there is less dead timber than we have in the upper counties, timber that is hundreds of miles away from the furnaces; also in Kentucky and in North Carolina; the percentage of dead timber in the counties I have worked in in these states is far greater than the percentage of dead timber anywhere throughout this section. The percentage of dead timber in Yancey and Mitchell and Whitley counties in Kentucky than it is in the North Georgia section, but I think it is about the same in Harlan County Kentucky; in Harlan County Kentucky I think the percentage of dead timber is about the same as it is here.

Q. 128. Is that less than you found elsewhere in the mountain region of the South?

A. You mean these Georgia lots?

Q. 129. Yes?

A. Yes sir, it is a great deal less.

604 Q. 130. What about Harlan County, Kentucky?

A. In Harlan County, Kentucky, the percentage of dead timber will compare very closely with that here.

Q. 131. Is that less or more than elsewhere?

A. It's a great deal less than elsewhere.

Q. 132. Now taking the different varieties of timber, first take Hemlock, state whether or not there is much or little of that dead in these forests through which you have traveled?

A. There is a great deal of dead timber; it's been dying for a long time. I have been working in a number of counties in Tennessee for the past thirty years or more, and for the last twenty-five years the timber has been dying very rapidly, particularly the Chestnut.

Q. 133. I'm talking about Hemlock, we *got* get to the Chestnut after a while?

A. The dead Hemlock in that country is far greater than it is in this section. You will find, however, a body of Hemlock all right in East Tennessee counties; then again you will come across immense bodies of dead Hemlock.

Q. 134. In what counties in Tennessee, Kentucky and North Carolina have you observed or noticed the Hemlock dying?

A. In Morgan, Roane, Overton, Fentress, Cumberland, Scott, in Tennessee particularly.

Q. 135. How is the Hemlock in the Kentucky counties that you noticed?

A. Nearly all dead.

Q. 136. How about in the counties in North Carolina that you have gone through?

A. A great deal of it is dead; that is along the line of the railroads. When you get back into the country away from the railroad, I don't know how it is. We travel for miles and miles on the railroad and you see dead Hemlock just like you find it in East Tennessee.

Q. 137. Do you know enough about the diseases of timber to know or have an idea of the disease that is causing the Hemlock to die?

A. I think I know some of them.

Q. 138. What are they?

A. I think the Hemlock has a borer. The other dis-
605 eases or causes I don't know. I also think that we find Hemlock along on the creeks and on the mountain sides where they have had fires; that burns the leaves and leaves the surface unprotected and the heavy rains cause an erosion of the soil and leaves nothing to support a tree. Up in Morgan county just above Nemo there is a large section there where practically all the Hemlock is dead. The condition on back South of these points, not over three miles, we have a pretty fine body of Hemlock dying; insects get into it.

Q. 139. I wish you would describe the condition of the Hemlock in North Georgia, within the smoke zone?

A. You will find a good deal of Hemlock in Georgia in the smoke zone, and some out of the zone.

Q. 140. What is becoming of it?

A. Some of it has been cut down and manufactured into lumber and some of it is dying. It is dying now ten and fifteen miles away, very rapidly. Along on Jack river the Hemlock is dying.

Q. 141. Is it dying and more rapidly than it is in the counties in Tennessee?

A. No sir, not as much. Fire causes the destruction of timber, and I have seen evidences of fires; numerous fires.

Q. 142. Did you ever see any Hemlock dying on Jack river from Smoke fumes?

A. No sir. I never saw any dying from Smoke fumes on Jack river. I am as positive of that as I am that I am sitting here answering questions.

Q. 143. Did you ever seen any Hemlock die anywhere in North Georgia from the smoke fumes?

A. Yes sir. On the Ocowee river, down the river, I think it's along there at Patterson's ferry I have seen the effects of the *some* there.

Q. 144. The effect enough to kill the tree?

A. I think not, but I saw the effects of the smoke.

Q. 145. Are the points you mention here in Georgia, or not?

A. No sir, in Tennessee.

Q. 146. Did you see any evidence of Hemlock timber dying from smoke fumes in North Georgia?

A. No sir.

606 Q. 47. With reference to the Chestnut, I wish you would describe the condition of the Chestnut forests here through these various counties in Tennessee, North Carolina and Kentucky?

A. In Tennessee we haven't got any Chestnut; it is practically all gone; you will travel for days and days throughout the mountain sections of Tennessee and you won't hardly find a Chestnut tree; there is a good many on the ground but the Chestnut has been dying very rapidly in Tennessee for the last twenty-five years; I don't believe that you could get a bushel of Chestnuts in that whole section.

Q. 148. Have you any knowledge of why the Chestnut is dying?

A. I think, generally to the borer. I don't think the borer has reached this section yet. I find some live green healthy Crestnuts in Fannin County. I find more there than I do in all of the counties in East Tennessee that I have been through.

Q. 149. I wish you would describe the difference between the present condition of the Chestnut timber in North Georgia as compared with the other sections of the country through which you have traveled?

A. I find a good deal of good Chestnut timber in North Georgia. I find a lot of Chestnut standing. I have seen some fine bodies of young Chestnuts; as fine as I ever saw. I have seen hundreds of acres in that Jack river country over there, and on the East slope of the Cowpen Mountain, and down Cumberland creek and Jack river there is a fine body of young Chestnut in there that is healthy and vigorous. I didn't see any Chestnut in the country until I got in that section in there.

Q. 150. In your travels in 1912 and 1913, did you see any evidence of smoke damage to the Chestnut timber in North Georgia?

A. No sir.

Q. 151. Did you notice to see whether or not there was any young Chestnut growth in this original territory where the vegetation was damaged?

A. Yes sir, you will find a good deal of young Chestnut growing right up near the furnaces.

Q. 152. Have you observed whether or not there was any damage to that timber resulting from these fumes?

607 A. No sir, no damage to it when I went over it last.

Q. 153. What is the condition of the oak timber in the

several counties through which you traveled in the States of Kentucky and Tennessee?

A. There is not much good oak. Nearly all of the oak timber that — of any value has been taken out.

Q. 154. Been cut?

A. Yes sir.

Q. 155. Have you noticed any oak timber dead in this section?

A. It is dying. I don't know what is killing the oak trees, but a good deal of it is dying.

Q. 156. Is it dying in such quantities as the Hemlock and Chestnut?

A. No sir.

Q. 157. How about the oak timber in North Georgia?

A. I have seen more fine tracts of oak timber in North Georgia than I have anywhere. I will have to change my answer in regard to the last question, because in Polk County, Tennessee, I have seen some very fine white oak.

Mr. DRAKE: I *expect* to the answer as to seeing fine tract of oak timber in North Georgia, because we don't deny that there are some fine tract of oak timber in North Georgia. Exception overruled. Appeal prayed and granted.

Q. 158. Whereabouts in Georgia did you see fine oak timber?

A. I think the best oak timber I recall seeing in North Georgia is across the mountain near Higdon's place up there Fighting Town creek; I don't recall whose land it's on, but I believe that's the best White Oak in North Georgia.

Q. 159. About how far from the Tennessee furnaces?

A. I should say ten or twelve miles; maybe more.

Q. 160. In your inspection in 1912 and 1913, did you ever observe any damage; any smoke damage to oak timber in any part of North Georgia?

A. Not outside the limit.

Q. 161. Did you see any damage by smoke to the timber at any place in this State?

608 A. No sir; this timber is nearly all cut over up there near the State Line.

Q. 162. Is there any timber near the State line in the State of Georgia in the vicinity of the copper furnaces still standing that is of any size?

A. No sir; not of any value; it has all been cut out.

Q. 163. What evidence do you see of its being cut?

A. You see the stumps and you don't find any trees; you will find log roads, and we know that there are the little mills that was in there cutting the timber.

Q. 164. What was the condition of the young foliage in there at the time you made these examinations; what was the condition of the young foliage and the underbrush, and the young trees that were growing in that locality?

A. The young trees where the soil was very fair were very vigorous; but about where they had had fires the underbrush showed the

effects of the fires, but the young trees that were coming on were very vigorous.

Q. 165. Did you or not refer to young trees in North Georgia near the State line?

A. Yes sir; also right West from the furnaces.

Q. 166. State from what causes the timber in North Georgia lying immediately South of the Tennessee line have been damager or has been damaged?

A. Nearly all of that has been cut over; there is very little good timber near the State line; as I said, nearly all of it has been cut over and a majority of it that is standing is scrubby small timber.

Q. 167. Naturally scrubby?

A. Yes sir, most of it is.

Q. 168. Where there is any timber of any size in North Georgia does it show any evidence of having been damaged by fire or any other causes?

A. The good timber?

Q. 170. The forests of North Georgia; is there any evidence of forest fire?

A. I don't remember. I have seen black smoke on the leaves along the mountain side South of the line and South of the furnaces, and between Higdon's store and the furnaces.

Q. 171. I am not speaking of damage from the furnaces, I am speaking about damages from forest fire?

609 A. You find that everywhere; not only in Georgia, but everywhere.

Q. 172. Do you find evidence of damage from fire in Georgia?

A. Yes sir, considerable. I think there is far more damage done by forest fires than any other one cause that I know of.

Q. 173. Please explain to what extent you have seen evidences of forest fires in North Georgia?

A. In nearly all of that territory down about Pearceville and the top of Cowpen mountain; all along there and along Jack River, and through that section there is a great deal of evidence of forest fires. The Vestle property, on their property in there, and I have seen evidences of forest fire at Epworth and along in that section there recently.

Q. 174. Have you seen any fires actually burning?

A. I have seen smoke, but I don't recall what trip that was. You mean in Tennessee or Georgia?

Q. 175. I mean in Georgia?

A. I don't think I have.

Q. 176. Please explain in what way damage arises from forest fires?

A. I think the first thing is the burning of the leaves. It begins by burning the leaves, and the heavy rains follow, and particularly on the steep slopes of the mountain sides, where the soil is rolling it washes away the soil, and then of course that checks the growth of the timber; then other fires come along and finally a great many trees die from it. I have seen in this North Georgia Country here, as well as in other sections, where the flames have gone as high as

fifty feet on the trees, and you also see the effect on the undergrowth where it destroys that.

Q. 177. Did or not the forest fires in a measure destroy the undergrowth and underbrush?

A. Yes sir.

Q. 178. What effect does that have on the probability of the soil being washed?

A. I just stated, when you remove the leaves, and then the heavy rains come, that washes away the soil, particularly on the steep hillsides of the mountains, and there is nothing to support the trees.

Q. 179. Does that or not destroy the root growth?

A. Yes sir, that destroys the root growth; I have already stated that.

610 Q. 180. You have stated in some detail the amount of dead timber you have observed elsewhere than in North Georgia, do you remember any special localities where you have seen considerable stretches of dead timber?

A. Yes sir.

Q. 181. Where was that?

A. You mean in North Georgia?

Q. 182. No, elsewhere?

A. In the State of Tennessee we find a great deal of dead timber. In Marion, Sequatchie, part of Hamilton, Van Buren, White, part of Putnam, a great deal in Overton, Fentress, Cumberland, Roy, Roan, Morgan, Scott, and you will also find evidences of fires in Anderson and Claiborne, but not to the extent I found it in other counties; not so much of it as in other counties; also in Kentucky, Whitley County, you will find evidence of it there.

Mr. DRAKE: We except to all of these counties outside of Georgia on the ground that it is irrelevant. Exception overruled. Appeal prayed and granted.

Q. 183. You stated that you found dead timber in all of these counties?

A. Yes sir, a great deal of dead timber; a large percentage of dead timber.

Q. 184. You stated that you saw evidences of fire in Anderson and Claiborne counties; what do you mean by that, do you mean dead timber killed by fire or other causes?

A. A large percentage killed by fire, and some from other causes, I don't know, except as to the Chestnut. I think the Chestnut in these counties are dying from old age and from the borer.

Q. 185. What about the Hemlock?

A. There is very little Hemlock in Anderson and Claiborne Counties.

Q. 186. And these other counties where you found it dead?

A. There is more dead timber in Marion and Cumberland and Morgan, Overton and Scott than any counties I know of.

Q. 187. Did that timber die from forest fires or diseases other than fires?

A. Forest fires and other causes; it has been dying for a good

while. I have been doing a great deal of work in all of these counties and have been watching it very closely for twenty-five or thirty years.

611 Q. 188. State whether or not you have in your possession a map of Tennessee showing the location of all these counties?

A. Yes, sir.

Q. 189. Will you designate on that map the various counties through which you traveled and about which you have been testifying here; and also show the location of the counties you traveled over and inspected in Kentucky and North Carolina on the same map and file same as Exhibit "B" to your deposition?

A. Yes sir.

Mr. DRAKE: I except to it as being irrelevant. Exception overruled. Appeal prayed and granted.

A. I would rather not file this one; this is one I marked for your own information. I have one just like it and I will give the same counties and put it in a little better shape.

Q. 190. Do you know, Mr. Shiflett, whether or not the United States Government has had the Wetmore lands, and probably other lands which lie near Ducktown inspected by its forresters?

A. Well, I know in a general way. I have that information.

Mr. DRAKE: I except to the question and answer as not being the best evidence. Exception overruled. Appeal prayed & granted.

Q. 191. Do you know whether or not the United States Government, as a result of that investigation has purchased these lands under the Act of Congress authorizing the purchase of lands in the Appalacian region?

A. I have been advised that it has.

Mr. DRAKE: We except to that question on the ground that it is irrelevant, and on the further ground that it is hearsay. Exception overruled. Appeal prayed and granted.

Q. 192. On any of these trips which you too kthrough North Georgia, did you observe the crops and fruit trees and the condition of the fruit crops?

A. Yes sir.

Q. 193. What did you find their condition to be?

A. I found their condition to be good whenever we had sufficient rain,—unusually good. Now last year when we had such a drouth over here in Tennessee, on Jack river I never saw such

612 luxurious corn, beans, fine gardens and vegetables of all kinds and fine fruits. The year before that I don't think I ever saw finer crops when we camped on Bear branch near the Jack river.

Q. 194. What season of the year was that?

A. In September, as well as I recollect.

Q. 195. With reference to White Pine, what did you find the condition of the White Pine to be in North Georgia while inspecting it in 1912 and 1913?

A. We didn't find a great deal of White Pine, and what we did find was thrifty; particularly the young White Pines.

Q. 196. Is that with reference to White Pine growing close up to the line?

A. Not far from the line, and in Tennessee and Georgia both.

Q. 197. Did you notice any appearance of the White Pine having been damaged by any smoke fumes?

A. No sir; I didn't see the effects on the White Pine on any of these trips.

Q. 198. Do you know whether or not White Pine is specially susceptible to these fumes, is that true?

A. Yes, sir.

Q. 199. What did you find the condition of the White Pine to be through these other counties in Tennessee far removed from these furnaces?

A. A greater part of the White Pine is dying; in a very unhealthy condition and has been for a good while; it has been dying as well as other timber.

Q. 200. Do you know from what disease it is dying?

A. Well, we find a little borer that is in the White Pine; I think the little borer is doing the work and destroying a great deal; I think the fire also; just like the other timber.

Q. 201. I wish you would state, taking the forests in North Georgia close up to the line near these furnaces, what are the conditions of these forests as compared with the conditions of forests elsewhere, which you have observed in your travels?

A. Far better. The conditions are better through North Georgia than in any other section of the country I have mentioned in all these travels I have mentioned, except in one county in Ken-
613 tucky,—Harlan County, Kentucky.

Q.—. How does it compare with Harlan County, Kentucky?

A. Very well; we find conditions there and the conditions here very similar. I think that is due though largely to the fact that the timber in Harlan County, Kentucky, has been very little cut over until the last few years, and they have been fighting the forest fires up there for a number of years, and they have very fine timber and are trying to take care of it.

Q. 202. How far is it from the Ducktown furnaces to the nearest of these Wetmore lands?

A. I don't believe that I can give you that distance without going back to the map. (Refers to map.) The Ducktown Sulphur, Copper & Iron Company would be about four and one-half miles to the nearest point, and from the Tennessee Copper Company's plant would be probably the same distance.

Q. 203. These other counties through which you traveled and inspected timber, how far are they from the Ducktown Company's plant?

A. From fifty to one hundred and seventy-five miles, except Polk County.

Q. 204. Where is your deposition being taken—where are you?

A. Blue Ridge, Georgia.
Q. 205. What place did you come from to Blue Ridge?
A. Harriman, Tenn. to Ducktown, and from Ducktown here.
Q. 206. Did you come through Copperhill?
A. Yes, sir.
Q. 207. When did you come?
A. Yesterday morning.
Q. 208. That is, the morning of August 11th?
A. Yes sir.
Q. 209. Did you notice the crops and the vegetation and the foliage of the trees as you came along?
A. Along the ro-d?
Q. 210. Yes, sir.
A. Yes sir.
Q. 211. What kind of crops are growing right near the furnaces?
A. Mostly corn along the railroad between here and the furnaces.
Q. 212. What is the condition of the corn crop?
A. Fine.
Q. —. How near did you see corn growing to the Tennessee furnaces?
A. In a quarter of a mile of the D. S. C. & I. Co.'s plant, right there in the basin.
614 Q. 213. Did you, or not, see a corn field near the Tennessee plant?
A. Across the river, I believe I did. I have seen it.
Q. 214. In what years did you see corn growing there?
A. In the last few years. I don't recall the dates.
Q. 215. What was the condition?
A. When we had good seasons, very good.
Q. 216. Did you see any gardens as you came along near this plant?
A. When coming here on this trip?
Q. —. Yes sir.
A. Yes, sir.
Q. 217. What were the condition of the gardens?
A. Seemed to be green and in good condition.
Q. 218. How did the gardens and the corn crops compare in appearance there and elsewhere?
A. Where they have had plenty of rain the corn crops appear to, be like they are here. In certain sections they are not near so good where we haven't had so much rain, I take it, as they have had here.
Q. 219. Did you notice the foliage on the small trees?
A. Yes sir.
Q. 220. What was the condition?
A. Green and Healthy.
Q. 221. How is the grass growing around the vicinity of the furnaces?
A. There are some mighty pretty law-s right there at the basin.
Q. 222. Did you see on any of the trees or in the gardens or in

the corn fields in there any evidence of smoke injury around in that vicinity on this trip?

A. No, sir. I don't know how it is off the railroad on this trip. I didn't go into the timber on this trip. My observations were made from the train.

Q. 223. Did you notice any appearance of injury as you passed along?

A. No sir, everything looked healthy and green.

Q. 224. What is the appearance of the foliage here in Blue Ridge, and the gardens?

A. They seem to be green and thrifty.

Q. 225. Have you been looking around some since you have been here?

A. Yes sir.

615 Q. 226. State whether or not you have been able to observe any damages whatever arising from smoke fumes here in Blue Ridge?

A. None whatever.

Q. 227. Have you observed any smoke in the atmosphere?

A. No sir.

Q. 228. Have you observed that the roads here are in especially bad condition?

A. The roads?

Q. 229. Yes, the roads, haven't they an unusually washed appearance from the rains,—heavy rains?

A. I haven't been over the roads except the railroad, and haven't paid much attention to the roads between here and Copperhill. They haven't got many roads in this country. I haven't traveled over many of them.

Cross-examination.

By Mr. DRAKE:

Q. 1. What is your profession?

A. I am a mining engineer and civil engineer. I am doing altogether specialty work. I am employed by companies as consulting engineer to examine properties and report on properties and lands, etc., and opening up mines.

Q. —. You are not a botanist then?

A. No sir.

Q. 3. Nor an etymologist?

A. No sir.

Q. 4. You haven't studied those branches of the sciences dealing with the bug life and of the life of timber and those kind of things?

A. Yes sir, I have studied some, but not in school.

Q. 5. You are not an expert on bug life are you?

A. N- sir, I am not.

Q. 6. Do you undertake to say what causes the condition of the forests immediately South of these plants in the State of Georgia for the first four, five or six miles?

A. I don't think I quite get your question.

Q. 7. Do you say that the forest is normal five or six miles in the State of Georgia South of the Tennessee Copper Company's plant and the Ducktown Sulphur, Copper & Iron Company's plant?

A. Well, I find dead timber, just like I find anywhere else.

Q. 8. Do you say that that forest is normal, Mr. Shiflett?

A. It's hardly normal; the timber is too scrubby to be
616 normal.

Q. 9. What is the matter with it, if it's not normal?

A. I think a great deal of it has been cut over, and then the fires; we have had a number of fires, I take it, like we have everywhere else, and there are a great deal of trees dying from causes, I don't know.

Q. 10. You don't know what is causing it?

A. No sir.

Q. 11. You do know that there is a great deal of dead timber in there?

A. I know that there is some dead timber in there; I don't know that there is a great deal of dead timber there.

Q. 12. Do you say that that forest is in a great deal better condition than the average forest in the South?

A. No sir, not in the South. I made reference to certain counties.

Q. 13. You don't mean to say the forests generally in the South?

A. No sir, I have confined myself to the counties I have been working in.

Q. 14. These counties you picked out were the worst affected sections you know of anywhere?

A. I believe so.

Q. 15. You don't know what is causing it to die up there do you?

A. I think I do.

Q. 16. Do you know what is causing it to die generally?

A. Some of the timber is dying from causes I don't know, not being familiar with the causes, but I know that a good deal of it is destroyed by forest fires. I think the biggest portion of it is destroyed by forest fires.

Q. 17. That is your opinion, you don't speak as an expert on that?

A. No sir, I don't speak as an expert, I am not an expert and don't claim to be, but I believe that I have intelligence enough to know good timber from bad timber and to know when it is dying and not dying.

Q. 18. You've done said that you didn't know what was killing it?

A. I said I didn't know what was killing all of it. Unless you watch a tree from the beginning I don't know that any man could tell what killed it, but we have our opinions in regard to these
617 matters, and these opinions are based on our observations from time to time.

Q. 19. How many times have you testified for the Ducktown Copper Company?

A. Let's see—I think three or four times.

Q. 20. You have been in their employ off and on ever since 1909 haven't you?

A. I didn't do any work for them for a considerable time. I did some work for them in 1909, and I don't think I did any more work for them until 1912.

Q. 21. Since 1912, you have done some work for them?

A. Yes sir, I have done some work.

Q. 22. Been in their employ off and on?

A. Yes sir.

Q. 23. Even now?

A. Yes sir, I am here as a witness.

Q. 24. Have you been doing any inspection work for them for the last few weeks or months?

A. Not in the last few weeks. The last inspection I made was in February and March of this year.

Q. 25. Have you ever worked for the Tennessee Copper Company?

A. No sir.

Q. 26. You have worked for some other corporations or capitalists, as you say, in this kind of work, heretofore, have you not?

A. Yes sir, in the examination of mining properties and timber properties and reporting on them.

Q. 27. You haven't worked for any other Copper Company around here in this neighborhood, have you?

A. No sir, I have not. I believe I did do some work for a copper company on some paper, but I don't really know whether they had copper or not.

Q. 28. You haven't been in North Georgia this year making any inspections in there this summer have you?

A. No sir, I have been very close to the line, but I haven't been in North Georgia this summer.

Q. 29. Do I understand you to mean, Mr. Shiflett, that this copper smoke is a benefit to North Georgia,—you say that these forests are in better condition than these other forests you have been examining?

A. No, I don't say that it is beneficial; no kind of smoke is beneficial.

Q. 30. What am I to understand you to mean when you
618 say that they are in better condition than these other forests?

A. I said that the timber was in better condition; that the percentage of dead timber was less in North Georgia.

Q. 31. Wouldn't you attribute that fact to its being located close to the smoke or something like that?

A. No, I don't think the smoke has got anything much to do with the timber in this section.

Q. 32. You don't believe that the smoke kills it anyway?

A. Yes, I believe that the constant application would kill it.

Q. 33. You spoke a number of times about the smoke zone, or damage zone, how far did that extend into Georgia?

A. About as far Southwest as Pearceville. We saw some evidence

of it there, and a little East of Epworth; I don't think any further South than that.

Q. 34. You said that the smoke area had not extended since 1909, what do you mean by that?

A. Very little, except through the low gaps.

Q. 35. Through the low gaps, how far has it extended since 1909?

A. I can't say how much, but very little.

Q. 36. Would you say five miles or further?

A. No sir.

Q. 37. These points which you have named as being outside of what you call the smoke zone, I will ask you if this is not as much as four to five miles South and Southwest of the Tennessee Copper Company, and six, seven and eight miles South and Southwest from the Ducktown Copper Company?

A. About that, I think that it is.

Q. 38. As I understand you, in your trips along in this smoke zone in Georgia, made in 1909, 1912 and 1913, you found evidence of smoke damage?

A. The only evidence of recent effects were in one or two places. I take it that some of that country was affected a good many years ago.

Q. 39. In your original examination didn't you say to General Fowler that when you made these different trips that you took, in each instance, didn't you say that you found evidence of smoke damage in this smoke zone, as you call it?

A. I have found evidence of smoke inside of that zone. I made that statement.

619 Q. 40. Again, didn't you state, and isn't it a fact, that on every one of those trips over in Georgia, you found evidence of smoke damage?

A. If I went over the same territory I did.

Q. 41. You know where it is, and you can see it in your mind's eye, can't you, now where is it?

A. The only recent evidence of smoke damage is around Epworth and East of Epworth.

Q. 42. And up and around Fightin' Town Creek, wasn't there a little up there?

A. No sir.

Q. 43. Between Big Fightin' Town and Little Fightin' Town?

A. No sir, no evidence in there.

Q. 44. Over towards Tumlin Creek, didn't you see it in there?

A. No sir, not anywhere. Near the headwaters I think there is a little evidence of smoke; that is there is some dead timber on upper Tumlin Creek, I don't know what killed it.

Q. 45. Didn't you see burnt leaves that looked like they were fresh scorched and burnt on them trips?

A. In 1910 I did.

Q. 46. Didn't you in 1913, last year?

A. No sir.

Q. 47. Didn't you in 1912?

A. No sir.

Q. 48. Didn't you tell General Fowler that on that trip in 1912 you saw recent damage, and saw where it had been all along there?

A. From fires or from smoke?

Q. 49. I mean burns from smoke—didn't you see that all along there?

A. I believe I did say in 1909 and 1910 and I believe in 1912. I think I saw more evidence in 1910 than I have ever seen since, and that was up near Epworth recently. I had been on Fightin' Town Creek and when I went down I couldn't see the recent effects of the smoke, but when I went back I could. I saw where it struck the leaves along the road, and then I made an examination of quite a little area.

Q. 50. Do you know smoke damage when you see it?

A. Yes sir, I think I do.

Q. 51. Is that easily told from anything else?

A. Yes sir.

Q. 52. If you did see it you would know it?

A. Yes sir.

620 Q. 53. What is the effect of smoke on vegetation?

A. As I stated just now the constant application would soon destroy it and kill it.

Q. 54. What is the temporary effect?

A. The temporary effect is to check the growth, if it is heavy enough.

Q. 55. What is the temporary appearance of the foliage that has had an application of this sulphur dioxide?

A. Discoloration.

Q. 56. In what way?

A. It has something of the appearance of frost bite.

Q. 57. After it has stayed for a few days or weeks, I will ask you if it doesn't change color further and turn a brownish cast?

A. Yes sir.

Q. 58. That is the appearance?

A. Yes sir. But that will depend, however, on the amount or quantity of smoke that the leaves get.

Q. 59. You stated that Hemlock was scarce up in that country, up in this North Georgia country?

A. I didn't see a great deal of it except in certain localities. On Jack river there is a great deal of it but that has been cut over.

Q. 60. Didn't you state in your original examination that fires burned the leaves off, leaving the slopes of the steep mountain sides bare, and that would cause the Hemlock to die?

A. Yes sir, and any other tree.

Q. 61. Do you know anything about the nature of the Hemlock?

A. Well, it is a long life timber, I think.

Q. 62. Do you know its habits and where it grows?

A. Along the elevations and steep hillsides mostly. You will find it along the ravines and hillsides, as well as down in the ravines.

Q. 63. Do you know whether or not Hemlock is very susceptible to this smoke, this sulphur dioxide?

A. No sir, I don't know that I do.

Q. 64. Well you know well enough that smoke does affect the trees, do you know what varieties it affects soonest, and what varieties are most susceptible to this smoke injury?

A. Only from my observations. The young and tender white pine and the locust show it quicker than any other tree.

Q. 65. The locust, did you say?

A. Yes sir.

621 Q. 66. If the Hemlock is the most easily affected of the trees, you hadn't observed that?

A. No sir, I have not.

Q. 67. You think locust, and you mean by that these black locusts they make posts out of?

A. Yes sir; that is the leaves on it show it very quickly; like the pines on the White Pine.

Q. 68. If the locust is in fact the last tree almost to be affected by smoke you haven't observed that, and don't know that to be a fact?

A. There is not so very much locust that I know of anywhere near the copper plants. There is a couple, I believe, a little East of the D. S. C. & I. Company plant over in Tennessee in Polk County, near the Cherokee County line, and a little locust South of the Ocowee river.

Q. 69. Please answer my question Mr. Shiflett, I didn't ask you anything about that?

A. I wouldn't swear that it is, but I know we observe it on the leaves very quickly. The least little smoke will show on the locust leaves quickly, when you don't find it anywhere else.

Q. 70. Do you know how the Hemlock reproduces itself?

A. No sir.

Q. 71. Do you know about plant life enough to know that when a tree is in bloom or the pollen is on it that it is most easily affected at that time?

A. I should think so, yes sir.

Q. 72. If the Hemlock reproduces itself by seed and does not in any other way, you don't know that to be a fact?

A. No sir, I do not.

Q. 73. You wouldn't undertake to say what has caused the almost total destruction of Hemlock in North Georgia, would you?

A. No sir, nor anywhere else.

Q. 74. Do you know how the oak reproduces, do you?

A. Well, from the acorn.

Q. 75. Any other way?

A. I don't know that it does; I don't know of any other way.

Q. 76. You don't know that they come up from the roots?

A. Of course they have sprouts from the roots.

Q. 77. That would be one way to reproduce, wouldn't it?

A. Yes sir.

622 Q. 78. You spoke about being over in the Jack river country, and said that country had never been affected by the smoke?

A. I believe I made that statement; that's what I think about it. I don't think that the smoke ever affected anything in the Jack river country.

Q. 79. You stated as a reason that the smoke would diffuse?

A. I think the smoke would diffuse before getting there.

Q. 80. What reason would you give for the smoke not getting over there?

A. You mean from the copper companies' plants?

Q. 81. Yes.

A. I think that it would diffuse long before it ever got there.

Q. 92. Don't you know that there is a high mountain between where your camp was on Jack river and these copper companies, and that is the reason that smoke can't get over there?

A. No, I wouldn't say that.

Q. 83. Any other mountain in there?

A. Yes sir.

Q. 84. What are they?

A. One of them is the Blue Ridge; there are two or three different mountains in there that go by local names.

Q. 85. Those mountains are between where your camp there on the Jack river was where you saw all these fine crops, and the copper companies?

A. Yes sir, those mountains are between our camp and the copper companies.

Q. 86. Between the Jack river where you saw such fine crops; such fine corn and green vegetation generally that you were telling Mr. Fowler about in 1913?

A. Yes sir, in 1912 and 1913.

Q. 87. And the reason that you give that smoke can't get in there is that it would diffuse?

A. There are a great many reasons why smoke doesn't get in there. I have been in there frequently and have never seen any, and I don't believe that it would get in there.

Q. 88. And the least reason you give for that is them high mountains intervening?

A. I haven't given that at all.

Q. 89. That wouldn't be any reason at all?

A. I don't know that that is any reason.

623 Q. 90. You don't know much about the diffusion of gases and the way they travel do you?

A. Well, I don't know about all of them, but I know something about it.

Q. 91. Do you know enough about it to know how the smoke trav*l*es in this country from these plants?

A. Well, I shouldn't think that the smoke from the furnaces, or from the stack there near the plant would ever reach this country.

Q. 92. That's not the question; please answer the question?

A. No, sir, I can't tell you.

Q. 93. Do you know whether or not the mountain side facing towards these plants will be more affected by smoke than the mountain side that faces in the opposite direction?

A. Yes, it would, but if there was sufficient smoke to back up on the other side of the mountain, the other side would be affected almost as badly as the side presented to the furnaces.

Q. 94. Wouldn't that be on account of a ravine or gap or break in the mountain so that the smoke could go through?

A. Yes, sir.

Q. 95. Now, if there was a straight mountain and no gap or break in it, wouldn't the side facing the furnaces be affected more than the opposite side of the mountain?

A. I should think that it would.

Q. 96. Wouldn't that lead you to believe that a mountain side intervening between these plants would be a protection from the smoke?

A. If it was high enough it might.

Q. 97. If the mountain was only moderately high, wouldn't that have a tendency to check and diffuse the gas?

A. I think that the smoke strikes low down and goes through the low gaps.

Q. 98. Well, then you wouldn't say that these hills around Ducktown Copper didn't diffuse or scatter the gas or smoke?

A. Yes, sir.

Q. 99. How do you reconsile that with the statements you have been making?

A. You have been giving me a mountain five or ten miles away from the plant. I don't think that they would have any effect on the conditions of the smoke. Right close to these plants I think they would.

624 Q. 100. Didn't I ask you if any mountain or any hill, wouldn't it tend to diffuse or scatter this smoke?

A. It would, if near by.

Q. 101. Will you please explain why, if the smoke struck a mountain far off it wouldn't stop it just as well as if sitting right by?

A. It might if it got there. I don't know that it would get to this mountain far off.

Q. 102. Now you do know, do you not, that every vestige of timber on top of these hills around in the immediate vicinity and neighborhood of the Ducktown Copper Company is gone?

A. No, sir, I do not; there is a good deal of timber on the East of the two plants in the basin.

Q. 103. Is there a tree of any kind whatever on top of the ridges between these two plants; if so what is it and where is it?

A. No, sir, not that I know of between the two plants.

Q. 104. What would you say has caused all of that timber to be gone from there?

A. I can't say as to how that timber was gone. That timber was gone before I went into that country. I have been advised that the greater part of it was cut out and used in there when they were using the open hearth process.

Q. 105. Those hills are as barren as a publicly traveled street aren't they?

A. They are pretty barren of trees.

Q. 106. Would you think that any forest that was cut off for wood or for logs would leave it in that condition, is that what I am to understand from your answer?

A. I do not, no, sir.

Q. 107. You have just answered that the wood was cut off and hauled off for wood and timber and other things and left me to believe that was the cause of the timber being gone?

A. No, sir, I think that the smoke killed a good deal of the timber.

Q. 108. Don't you know that that smoke is the cause of no young timber springing up there?

A. The soil is eroded. There is some young timber growing where they have good soil; they have good gardens, fruit trees and grow fine fruit there. I don't know that there has ever been
625 any timber or young trees planted to see what it would do, but there are some yellow pines out West from the plant and are standing there yet.

Q. 109. What were you doing out one hundred and seventy-five or eighty miles in middle Tennessee looking at forests?

A. I had work out there, and I was pretty familiar with conditions out there and I had stated what those conditions were; that they were worse there than they were in North Georgia, and after I made that statement I think probably some of them wanted to make an inspection of it, and that is when we made that trip.

Q. 110. You volunteered this information and then carried these men to look at it?

A. This information was given sir, on the witness stand.

111 Q. You are not the cause then of these men; this party going over into these counties in the mountains of Tennessee?

A. No, sir, I don't know that I am.

Q. 112. You are the one that gave them the information?

A. Yes, sir.

Q. 113. Mr. Sherman Reese was with you on that trip; did he take you or did you take him?

A. Mr. Sherman Reese was on one of the trips; I don't know whether he made any other trips or not; I am not sure as to that.

Q. 114. You went through fine healthy forests over in the mountains of Tennessee?

A. I don't find normal conditions anywhere.

Q. 115. Didn't you find thousands of fine healthy forests you wouldn't want to compare North Georgia with?

A. Where would I find them?

Q. 116. Please answer my question?

A. No, sir, except small bodies of timber occasionally.

Q. 117. If it was so bad all along the route, why did you travel 175 miles to show it to them to make the comparison?

A. I had made this statement on the witness stand, and they wanted to see it, and I didn't hesitate to show it to them.

Q. 118. You say that you couldn't get any Chestnuts in Tennessee?

A. Not in the counties I have been through.

Q. 119. Have you ever been on Frog Mountain?

A. Yes, sir.

626 Q. 120. Didn't you state in your original examination that you had worked over there?

A. No, sir, except inspecting trips.

Q. 121. That's what I mean?

A. Yes, sir.

Q. 122. That's over in Tennessee?

A. Little Frog is.

Q. 123. Well, over on Little Frog in Tennessee, what about the Chestnuts?

A. The Chestnuts are nearly all dead there.

Q. 124. I will ask you this, if there ain't enough Chestnuts that a man in the Fall of the year couldn't live on Chestnuts, if he wanted to?

A. I would hate to undertake the job myself.

Q. 125. I am handing you FP-8761; what kind of a tree do you say that is? And what caused the injury? (Hands folder with leaf in it to witness.)

A. It is a leaf; I don't know what it is; if I could see it on the tree I could probably tell you, but I can't tell you what it is now.

Q. 126. Tell us what caused that injury, if you can?

A. I wouldn't undertake to say what caused this injury; I don't know sir, what caused that injury.

Q. 127. Would you say that that is smoke injury?

A. No, sir, I wouldn't say what it is.

Q. 128. I am handing you FP-15014 (hands folder with leaves), please state what kind of leaves these are, and what caused the injury?

A. That looks like smoke, but I wouldn't swear that it was. It's an oak leaf I think.

Q. 129. What kind of oak?

A. I suppose that its white oak.

Q. 130. What caused the injury?

A. It looks very much like smoke, but I wouldn't swear that it was.

Q. 131. I am handing you FP-15728 (hands folder with leaves), please state what kind of leaf that is, and what caused the injury, if you know?

A. That's oak of some character. I don't know just what kind. It looks like scrub oak, called black jack, and the injury looks very much like fire might have affected it, but I can't swear that fire did. A man can fix these leaves up to suit himself.

627 Q. 132. I am handing you FP-15017 (hands folder with leaves), please state what kind of leaves those are, and what caused the injury?

A. Oak. I don't know what caused the injury. I think the same as the other; probably this discoloration is due to the same cause; I don't know whether it was smoke or not.

Q. 133. I didn't hear what kind of leaf you said it was?

A. I don't know what kind of oak it is.

Q. 134. I am handing you FP-15701 (hands folder with leaves), please state what kind of twig or foliage that is, and what caused the injury?

A. That is pine of some description, or white pine.

Mr. DRAKE: I except to you gentlemen making side remarks to witness. Exception overruled. Appeal prayed and granted.

A. It's dead now, but it looks like White Pine. I don't know what deadened it. It might have been done by fire and something else might have caused it.

Q. 135. I am handing you FP-8485 (hands folder with leaves), please state what kind of twig or leaves those are, and what caused the injury?

A. That is oak.

Q. 136. What kind of oak?

A. I think its black-jack. That looks very similar to the other specimens you showed me.

Q. 137. What kind of injury did you say?

A. I don't know what did it.

Q. 138. Do you think that it is the same as the other?

A. I believe so.

Q. 139. I am handing you FP-15697 (hands folder to witness), please state the kind of leaves those are and what caused the injury?

A. Chestnut, I believe. I can't tell for certain what caused the injury. It is similar to the other samples.

Q. 140. I am handing you FP-15029 (hands folder with leaves), please state what kind of leaves those are, and what caused the injury?

A. These are oak also.

Q. 141. What kind of oak?

A. That is the black jack, I think. I could tell better if they were green, but it looks very much like the scrub oak.

628 Q. 142. Did smoke cause that injury?

A. I wouldn't swear that it did.

Q. 143. Would you swear that it didn't?

A. No, sir.

Q. 144. The truth is you don't know much about smoke injury?

A. I don't know much about these samples you have got here. I know it when I see it in the woods.

Q. 145. Haven't you seen millions of leaves in these North Georgia woods, just like that?

A. No, sir.

Q. 146. I am handing you FP-8724, please state what kind of leaves those are, and what caused the injury?

A. These are maple, I think. I can't say for certain what caused the injury.

Q. 147. In your opinion *id* that smoke injury?

A. I would like to see that on the tree before I express an opinion.

Q. 148. I will hand you just one more, FP-8740, (hands folder with leaves), please state what kind of twig or leaf that is?

A. That is locust, I think.
Q. 149. What caused the injury?
A. I couldn't swear to that; I don't know.
Q. 150. Have you been about these plants, the Ducktown Copper Company's plant, Mr. Shiflett, a good deal?
A. Yes, sir, I have been about there a good deal during the time of my service for the State as Chief Mine Inspector.
Q. 151. And before that time and since that time,—in fact you are more of a mining expert that you are a tree expert, aren't you?
A. Yes, sir.
Q. 152. You are a mining engineer, are you not?
A. Yes, sir, and civil engineer.
Q. 153. Do you know the character of the furnaces they have over there?
A. Yes, sir, but I am not familiar with the other furnaces over there.
Q. 154. What kind of furnaces have they?
A. Furnaces for smelting copper ore, but I don't know anything about the other furnaces there; I don't know much about copper.
Q. 155. Do you know how big a furnace they use?
A. No, sir, I do not.
629 Q. 156. I will ask you to look at pages 226-227 of the Copper Hand Book, Volume 11, by Weed, and say if that furnace is not a 500 ton daily capacity, the Ducktown Copper Company's plant?

Mr. FOWLER: Counsel for defendant company objects to the question and answer because it is hearsay evidence. The exception is overruled. Appeal prayed and granted.

A. Yes, sir, two 500 ton Water Jacket Sectional Blast furnaces.

Redirect examination by Mr. FOWLER:

Q. 1. You have been asked about the smoke zone in 1909; now was that smoke zone extended in 1909, or 1906?

Mr. DRAKE: I except to the question because leading. Exception overruled. Appeal prayed and granted.

Q. 2. When was that smoke zone extended?
A. After the Tennessee Copper Company built that high stack.
Q. 3. In what year was that?
A. In 1906.
Q. —. What did you mean by the extension of the smoke zone in 1909 in response to the question asked you by counsel for the plaintiff?
A. That it had gone a little further from the zone that I had fixed, out through the low gaps.
Q. 5. Did that smoke zone extend further in 1909 than it did in 1906 and 1907 just after the construction of that high furnace?
A. No, sir.
Q. 6. What was the real cause of the extension of that zone?

A. I think that it was due more than any other cause to the increased production of the ore that was smelted and the high stack of the Tennessee Copper Company sending the smoke further away from the basin, and I think that the smoke of the D — C & I. Company diffused beyond the point of damage before it left the basin. I am thoroughly satisfied of this.

Q. 7. You speak of an increase in capacity of the furnaces, do you refer to the D. S. C. & I. Company, or to the Tennessee Company?

A. To the Tennessee Company.

630 Q. 8. What was it that created the original smoke zone; was it the roasting system?

Mr. DRAKE: I except to that as being original evidence and leading.

Exception overruled. Appeal granted.

9 Q. Now state whether or not, from your observation was that smoke zone decreased when the acid plant went into operation?

A. Yes, sir. You could begin to see signs of new growth timber coming out on the mountain sides East of the D. S. C. & I. Co. also on the mountain side opposite and East from them.

Q. 10. State whether or not, Mr. Shiflett, since the Ducktown Company has put in its acid plant you have seen evidence of smoke damages arising from that company?

A. No, sir, I have not.

Q. 11. You have been asked something about the condition of the vegetation on Fightin' Town Creek, when was it that you were on Fightin' Town Creek?

A. I think the trip on Fightin' Town Creek was made in 1910, as well as I remember, now.

Q. 12. You say that you never saw any smoke damage over there at all?

A. No, sir.

Q. 13. Did you ever see any evidence of smoke damage on that creek?

A. No, sir.

Q. 14. What time in the year 1910 were you there?

A. At different times. I had some prospecting work in there, and I would go there occasionally during the summer season. We began the work in May, if I remember, and the work I think we quit the work in September, if I am not mistaken. I was in there at different times while this prospecting work was being done.

Q. 15. To what extent did you examine the timber on Fightin' Town Creek?

A. At that time?

Q. *15.* Yes, sir.

A. Well, in a general way. I didn't make an inspection at that time to ascertain the cause and affect by smoke, but there was no evidence of smoke in there; absolutely none.

631 Q. 17. Did you later look at that timber for any purpose?

A. Yes sir.

Q. 18. How far up and down the creek did you look at it?

A. I have been nearly all over Fightin' Town creek; to the head-*quarters;* up in over Jack river and from Jack river up into Murray County.

Q. 19. You have been asked about the hills up around these furnaces and between these furnaces, I believe you say they are barren of timber?

A. Yes sir.

Q. 20. Any underbrush on many of these hills?

A. Between the furnaces?

Q. 21. Yes.

A. I don't think so.

Q. 22. Do you know whether or not it is covered with sedge grass?

A. No sir, not covered. The soil has eroded in a good many places, but there is a good deal of sedge grass over in there, but not in all of it, but it is in there in a good many places.

Q. 23. Do you know whether or not that sedge grass is burnt off in the fall?

A. I have seen it burn.

Q. 24. What effect would that have on the undergrowth?

A. That would kill the undergrowth and gives the rain a chance to erode the soil.

Q. 25. State whether or not you have seen fruit trees right around near these furnaces?

A. Yes sir.

Q. 26. What is their condition?

A. Very vigorous.

Q. 27. What is the condition of the gardens right around these furnaces?

A. Very good.

Mr. DRAKE: We except to that as being original evidence.

Exception overruled. Appeal prayed and granted.

A. I have seen very fine gardens where they have the ground properly cultivated; I have seen some as fine as I have ever seen anywhere.

Q. 28. Have you observed the location of these furnaces with reference to the Georgia line?

A. Yes sir.

Q. 29. State whether or not you have from time to time observed some coming from these furnaces?

A. Yes sir, and the difference in the elevation of these two stacks.

632 Q. 30. You have been asked on cross examination about damages at different times in the last four or five years in Georgia, state from which one of these furnaces these damages arose, such as they were?

A. If any damage at all, it must have come from the Tenessee Copper Company's plant.

Mr. DRAKE: We except to that as being original evidence; and also because it is a conclusion of the witness, with no facts stated on which to base a conclusion.

Exception overruled. Appeal prayed and granted.

Q. 31. State why it must come from the Tennessee Copper Co.?

A. The Tennessee Copper Company smelts more ore and their stack is higher by 100 feet; they have a higher stack and the smoke from its stack would carry to a greater distance in the mountainous section, than the other.

Q. 32. How much nearer is it to the Georgia line?

A. I have given you that once, but I have forgotten what it is.

Q. 33. About three miles, wasn't it?

A. I suppose it is.

Recross-examination by Mr. DRAKE:

Q. 1. These forest trips that you made in Georgia, Mr. Sherman Reese was your conductor, wasn't he?

A. Not on all of them.

Q. 2. On how many of them was he your conductor?

A. I think Mr. Reese was on every trip made for the Ducktown Sulphur, Copper & Iron Company.

Q. 3. Wasn't you sent out specially to look at the lands of Mr. Vestle and Mr. Shippen?

A. Yes sir, and get an general idea of the country I traveled over.

Q. 4. Didn't you state in your original examination, and since that, that the investigations you made were directed to and confined to these lands?

A. In 1912 and 1913 I think they were. In 1909, I don't recall just what case we had on trial and I was a witness in. Mr. Reese wasn't with me on that trip. I think I was accompanied by Mr. Simmons, Mr. Green Simmons.

Q. 5. You observed this smoke injury enough to know
633 that the effects go in sections and in spots?

A. Yes sir.

Q. 6. Don't you know if you had a conductor steering you away from it as much as he could, you might not see a great deal of it, not as much as if you had one with you out hunting for smoke; and that if you were out hunting for smoke you would find more of it than if you had a conductor trying to keep you away from it; that's a fact, ain't it?

A. I don't think that Mr. Reese had anything to do with my observations. When we come to property that Mr. Reese was familiar with, he showed it to me. I went where I pleased and didn't ask Mr. Reese. I have been all over this country, not only the Vestle property, but all of it.

Q. 7. I am asking you seriously, if it is not a fact that a man thoroughly familiar with this country, the smoke being in spots and section, taking a man that didn't know the country, if he couldn't

conduct him through and keep him away from the smoke injury entirely?

A. Not if the man was conscientious in his work; he would want to see what was doing it and the conductor wouldn't have much to do with it. I will say this, however, that Mr. Reese was anxious for us to see as much of the country as we could anywhere we wanted to go.

Q. 8. You said this morning that all the damage you ever seen in the State of Georgia in about five years' inspection wouldn't, if put all together, wouldn't amount to more than five acres?

A. Well, I said the recent effect I had seen.

Q. 9. Do you mean that five acres in all would constitute all that you had saw scattered over the country?

A. Yes sir, where I seen the recent effects on the trips for the Ducktown Company, and the trip on Fightin' Town Creek.

Q. 10. That was one of the trips you spoke of?

A. Two trips.

Q. 11. You don't mean then, all your trips?

A. Outside of the smoke limit, I do. That is the only evidence I saw.

Q. 12. That was on these two trips up the same route?

A. It was East of Pearceville.

634 Q. 14. I understood you to say that the smoke limit extended three to five miles South of the Tennessee plant?

A. Yes sir.

Q. 15. And eight miles South into Georgia from the Ducktown plant?

A. I believe I gave it further than that in some places.

Q. 16. In the low gaps it extended further?

A. Yes sir.

Q. 17. And that zone broadened about 1909; seemed to be broadened through the gaps only, and the other part narrowed down since the installation of the acid plants?

A. That occurred—I can't say when it did occur, because I wasn't in there.

Q. 18. Will you name some of the gaps through which it extended?

A. Without referring to my notes, I can't.

Q. 19. I mean off-hand?

A. No sir, I can't.

Q. 20. They are in the State of Georgia, some of these gaps are?

A. Yes sir.

It is agreed between counsel for plaintiff and defendants to waive reading over the testimony to the witness and having him to sign it.

STATE OF GEORGIA,
Hall County:

GAINESVILLE, GA., Sept. 7, 1914.

I, E. P. Kingsbery, the Commissioner before whom the foregoing deposition was taken by agreement hereby certify that I took the evidence of said witness in short hand and correctly transcribed the same into typewriting.

E. P. KINGSBERY,
Commissioner.

635 EXHIBIT No. 10 TO DEPOSITION OF FRANK E. SHIPPEN.
E. P. Kingsbery, Commissioner.

This Indenture, made and entered into this First day of May, Nineteen Hundred and Eight, between Shippen Brothers Lumber Company, a corporation organized under the laws of the State of Georgia, hereinafter called the "Lumber Company", party of the first part, and Tennessee Copper Company, a corporation organized and chartered under the laws of the State of New Jersey, hereinafter called the "Copper Company," party of *this* second part.

Witnesseth: That the said Lumber Company party of the first part for, and in consideration of the terms and conditions contained in a certain contract, entered into between the parties hereto on April 1st, 1908, and of the terms and conditions of a certain instrument of release executed on May 1st, 1908, and filed in escrow with Trust Company of America in New York City in pursuance of said contract of April 1st, 1908, to both of which contracts reference is here made as to their specific provisions and both of which contracts are made a part of this consideration as fully as though herein set out and copied in full, and in consideration of one dollar cash in hand paid at and before the sealing and delivery of these presents, the receipt whereof is hereby acknowledged, has and does hereby settle, compromise and release, each, every and all its claims and demands against said Copper Company, party of the second part, arising out of smoke injury or damage from the operation of the furnaces of said Copper Company in Polk County, Tennessee.

And it is further covenanted and agreed by said Lumber Company to and with said Copper Company that the said Lumber Company hereby acknowledges full and complete satisfaction and payment of all claims and demands past and present which it now has, or may have had against said Copper Company, its succes-
636 sors or assigns for any and all damages that may have arisen or that may arise from the operation of its smelter plants or from any smelter plants it may now have, or which may hereafter have by reason of smoke, fumes and gases passing over and upon the lands or timber now owned or controlled or in which said Lumber Company is now interested, and said Lumber Company, hereby covenants not to make any claim or demand in the future, or bring any action or proceeding either in law or equity on account

of damages or injury by reason of smoke, fumes and gases passing upon lands and interests now owned or claimed to be owned, controlled, leased or optioned by said Lumber Company, by any operation of said Copper Company without limitation in respect to any increase in the amount or intensity of such smoke, fumes and gases, or from any present or future method of operation, and *siad* Lumber Company hereby covenants to hold the said Cop-er Company harmless of, from, and against all claims and demands which may be asserted by said Lumber Company, its successors or assigns or any other party or parties for damages to said lands, timber and interest hereinafter described, by reason of smoke, fumes and gases passing over and upon the same.

But in case the Lumber Company sells any of its lands or interests the part of this covenant in reference to holding the Copper Company harmless shall not apply to the damages which might be claimed by its successors in title by reason of any increased amount or intensity of smoke, fumes and gases over and above that allowed by the easement hereinafter referred to.

And it is further covenanted and agreed by the said Lumber Company to and with the said Copper Company that for and in consideration of the above premises it has granted, bargained, sold and conveyed and does hereby bargain, sell and convey to said Copper Company, party of the second part, its successors and assigns a right or easement to maintain and operate smelters or plants as it may require, and to allow and permit the smoke fumes and gases therefrom to pass over and upon the following hereinafter
637 named lands, timber, options and interests without let, hindrance or molestation, of said Lumber Company, its successors or assigns, creating by this instrument a perpetual servitude, easement or estate, which shall run with the land in favor of said Copper Company, its successors or assigns and against said Lumber Company, its successors and assigns in respect to all the lands, timber, options, contracts and interests now owned or claimed to be owned, leased or optioned, or in which said Lumber Company claims to have interests, provided, however, that the said Copper Company, its successors or assigns maintain a smelting plant situated outside of the State of Georgia, emitting substantially no more smoke, fumes and gases than its present smelting plants can or might emit when operated at their fullest capacity without regard to the operation of the sulphuric acid plant and in case the said Copper Company, party of the second part extends its plant into the State of Georgia, or emits substantially more smoke, fumes and gases than such fullest capacity so stated, then in either of those events this easement shall not extend to the additional smoke fumes and gases so liberated or emitted, or any increased damage that may occur by the establishment of the said Copper Company's plants in the State of Georgia.

And it is further covenanted and agreed that nothing herein contained shall be construed as an admit-ion of causing any damage or of any liability of said Copper Company to said Lumber Company in respect to doing or causing any damages to said land or timber interests.

The lands and interests of the Shippen Brothers Lumber Company, now claimed by it and covered by the terms conditions, stipulations and provisions of this contract are more particularly described as follows: Original land lots numbers ten (10), Eleven (11), Twelve (12), Sixteen (16), Seventeen (17), Eighteen (18), Nineteen (19), Twenty (20), Twenty-one (21), Twenty-seven (27), Twenty-eight (28), One Hundred and twenty (-20) acremore or less of lot number Forty-six (46), all of lots numbers Forty-
seven (47), Forty-eight (48), Forty-nine (49), Fifty-two
638 (52), Fifty-three (53), Fifty-five (55), Fifty-six (56),
Eighty-four (84), Eighty-seven (87), Ninety-four (94), Ninety-five (95), Ninety-six (96), One hundred and Twenty-one (121), One Hundred and Twenty-two (122), and One Hundred and Twenty-four (124), all being situated in the Sixth District and first Section.

Also original land lots numbers Fifteen (15), Sixteen (16), Seventeen (17), Forty-seven (47), Fifty-three (53), and Eighty acres more or less of original land lot number Sixty-eight (68), all in the Fifth District and Second Section.

Also Original land lots numbers Five (5), Six (6), Seven (7), Eight (8), Nine (9), Ten (10), Eleven (11), Nineteen (19), Twenty-nine (29), Thirty (30), Thirty-two (32), Forty-one (41), Forty-two (42), Forty-four (44), Seventy (70), Seventy-two (72), Seventy-three (73), Seventy-four (74), One Hundred Sixty-one (161), One Hundred Sixty-five (165), Two Hundred Sixty-seven (267), Two Hundred Sixty-nine (269), Two Hundred Seventy (270), Two Hundred Seventy-two (272), Three Hundred and Three (303), Three Hundred and Four (304), Three Hundred Five (305), Three Hundred Eight (308), Three Hundred Nine (309), Three Hundred Ten (310), Three Hundred and Eleven (311) and Eighty acres more or less of original lat Number Sixty-seven (67) all in the Sixth District and second Section.

Also original land lots numbers Eighty-three (83), One Hundred Seventeen (117), One Hundred Thirty-three (133), One Hundred Thirty-six (136), One Hundred Fifty-two (152), One Hundred Fifty-five (155), One Hundred Fifty-seven (157), One Hundred Sixty-nine (169), One Hundred Seventy (170), One Hundred Eighty-eight (188), One Hundred Eighty-nine (189), One Hundred Ninety-two (192), Two Hundred and Three (203), Two Hunded and Seven (207), Two Hundred Twenty (220), Two Hundred Twenty-one (221), Two Hundred Twenty-five (225), Two Hundred Twenty-six (226), Two Hundred Twenty-seven (227), Two Hundred Forty-one (241), Two Hundred Forty-two (242), Two Hundred Sixty-one (261), Two Hundred Sixty-two (262), Two
639 Hundred Sixty-four (264), Two Hundred Sixty-five (265),
Two Hundred Seventy-five (275), Two Hundred Seventy-six (276), Two Hundred Seventy-seven (277), Two Hundred Seventy Eight (278), Two Hundred Seventy-nine (279), Two Hundred Eighty (280), Two Hundred Eighty Two (282), Two Hundred Ninety-one (291), Two Hundred Ninety-three (293), Two Hundred Ninety-five (295), Two Hundred Ninety-six (296), Two Hundred

Ninety-seven (297), Two Hundred Ninety-Eight (298), Two Hundred Ninety-nine (299), Three Hundred (300), Three Hundred Fifteen (315), Three Hundred Sixteen (316), Three Hundred Twenty-two (322), One Hundred and Forty-five (145) acres more or less of original land lot number Two Hundred and Nine (209), and Eighty acres more or less of *of* original land lot Two Hundred and Ninety (290), all situated in the Seventh District and Second Section.

Also original land lots numbers Twenty-one (21), Twenty-four (24), Thirty-seven (37), Thirty-eight (38), Forty (40), Forty-two (42), Forty-seven (47), Fifty-two (52), Sixty-two (62), Sixty-three (63), Seventy-one (71), Seventy-three (73), Seventy-four (74), Seventy-six (76), Eighty-four (84), Eighty-five (85), Eighty-six (86), Eighty-seven (87), One Hundred and Seven (107), One Hundred Nineteen (119), and One Hundred Eighty-eight (188), all situated in the Tenth District and Second Section.

Also original land lots Ninety-two (92), One Hundred Ninety-six (196), Three Hundred and Nine (309) and One Hundred and Ten (110) acres of lot number One Hundred and Ten (110), all situated in the Eleventh District and Second Section.

Also original land lots numbers Forty-nine (49), Eighty-three (83), Eighty-four (84), Ninety-eight (98) all situated in the Twenty-fourth District and Second Section.

Also original land lots numbers One Hundred Seventy-six (176), One Hundred Seventy-nine (179), One Hundred Eighty-three (183), One Hundred Ninety-nine (199), Two Hundred Thirty-two (232), Two Hundred Thirty-five (235), Two Hundred Forty (240), Two Hundred Forty-one (241), and Two Hundred and Seventy-eight (278), all situated in the Twenty-fifth Dis-
640 trict and Second Section.

Also original land lots numbers Fourteen (14), Fifteen (15), Sixteen (16), Twenty-two (22), Twenty-six (26), Forty-eight (48), Forty-nine (49), Fifty (50), Fifty-three (53), Fifty-five (55), Fifty-six (56), Fifty-seven (57), Fifty-nine (59), One Hundred Thirteen (113), One Hundred Fourteen (114), One Hundred Fifteen (115), One Hundred Sixteen (116), One Hundred Eighteen, One Hundred Forty-nine (149), One Hundred and Fifty (150), all in the Twenty-sixth District and Second Section. All the above original land lots being fee lands and each containing One Hundred and Sixty (160) acres, more or less and all lying and being in Gilmer County State of Georgia.

Also original land lots numbers Eighty-three (83), Eighty-seven (87), Ninety-five (95), Ninety-six (96), One Hundred Twenty-one (121), One Hundred Twenty-two (122), One Hundred Thirty-three (133), One Hundred Fifty-seven (157), and Eighty acres more or less of land lot number Ninety-four (94), all situated in the seventh District and Second Section.

Also original land lots numbers One Hundred Ten (110), Two Hundred Nineteen (219), Two Hundred Thirty-six (236), and One Hundred and Fifty-eight (158) acres more or less of number One

Hundred and Ninety-seven (197), all situated in the Eighth District and Second Section.

Also original land lot number One Hundred Forty-four (144) in the sixth District and First Section.

Also original land lots numbers Sixty-six (66), Sixty-seven (67), Seventy-four (74), Seventy-five (75), Seventy-six (76), One Hundred and Eighty (180), One Hundred Eighty-two (182), One Hundred Eighty-three (183), Two Hundred Eighty-six (286), Two Hundred Eighty-nine (289), Three Hundred Fifteen (315), and Three Hundred Nineteen (319), all situated in the Ninth District and second section.

Also original land lots numbers Three (3), Four (4), Five (5), Seven (7), Nine (9), Ten (10), Fourteen (14), Nineteen (19), Twenty (20), Twenty-one (21), Twenty-two (22), Twenty-
641 nine (29), Thirty (30), Thirty-one (31), Thirty-two (32), Thirty-three (33), Thirty-four (34), Thirty-five (35), Thirty-six (36), Thirty-nine (39), Forty-seven (47), Forty-nine (49), Fifty-one (51), Fifty-three (53), Fifty-eight (58), Fifty-nine (59), Sixty-one (61), Sixty-two (62), Sixty-four (64), Seventy-one (71), Seventy-three (73), Seventy-four (74), Seventy-five (75), Seventy-eight (78), Ninety (90), Ninety-three (93), Ninety-six (96), Ninety-nine (99), One Hundred (100) and One Hundred and Five (105), all situated in the Twenty-seventh District and Second Section.

Also original land lots numbers Sixty (60) and Forty acres more or less of lot number Five (5), One Hundred and Ten (110) acres more or less of original land lot number One Hundred and Fifteen (115), and Sixty (60) acres more or less of land lot Two Hundred and Thirty-seven (237), all situated in the Seventh District and First Section.

Also original land lots numbers One Hundred Thirteen (113) in the Eight- District and First Section. All of the foregoing being and lying in Fannin County, State of Georgia, and containing One Hundred and Sixty (160) acres more or less, and being fee lands.

Also original land lots numbers One Hundred Three (103), One Hundred Four (104), One Hundred six (106), One Hundred Seven (107), One Hundred Eight (108), One Hundred Nine (109), One Hundred Ten (110), One Hundred Eleven (111), One Hundred Thirteen (113), and One Hundred Forty-one (141), all in the Twenty-fifth District and Second Section.

Also original land lots numbers Fifty (50), Fifty-nine (59), Eighty-seven (87), Ninety-three (93) Ninety-four (94), Ninety-five (95), One Hundred Eighteen (118), One Hundred Twenty-four (124), One Hundred Twenty-nine (129), One Hundred Thirty-three (133), One Hundred Thirty-four (134), One Hundred Thirty-five (135), One Hundred Thirty-six (136), One Hundred Forty-nine (149), One Hundred Fifty (150), One Hundred Fifty-one (151), One Hundred Fifty-three (153), *One Hundred* One Hundred Fifty-five (155), One Hundred Fifty-six (156), One Hundred Seventy-one (171), One Hundred Seventy-five (175),
642 One Hundred Seventy-eight (178), One Hundred Eighty-seven (187), One Hundred Ninecty (190), One Hundred

Ninety-five (195), One Hundred Ninety-six (196), Two Hundred Five (205), Two Hundred Ten (210), Two Hundred Eleven (211) Two Hundred Eighty-five (285), Two Hundred Eighty-six (286), Three Hundred Four (304), Three Hundred Six (306), Eighty (80) acres more or less of number Two Hundred Seventeen (217), Eighty (80) acres more or less of number Two Eighteen (218), all situated in the Twenty Sixth District and Second Section.

Also original land lots numbers One Hundred Twelve (112), One Hundred Thirteen (113), One Hundred Eighteen (118), One Hundred Nineteen (119), One Hundred Twenty (120), One Hundred Twenty-one (121), One Hundred Twenty-six (126), Two Hundred Forty-three (243), and Two Hundred Seventy-three (273), all in the Twenty-seventh District and Second Section. All the above being situated in and lying in Murray County, State of Georgia, and each containing One Hundred and Sixty (160) acres more or less, and being fee lands.

Also original land lots numbers Two Hundred Forty (240), Two Hundred Forty-one (241), Two Hundred Forty-three (243), Two Hundred Forty-five (245), Two Hundred Fifty-three (253) Two Hundred Fifty-six (256), and Two Hundred and Fifty-seven (257), all situated in the Sixteenth District and First Section.

Also original land lots numbers One Hundred Fifty-one (151), One Hundred Ninety-seven (197), and Two Hundred and four (204), situated in the Seventeenth District and First Section.

Also original land lots Twenty-five (25), Sixty-six (66), Two Hundred Forty-nine (249), Two Hundred Seventy-three (273) and Two Hundred and Eighty-seven (287) situated in the Eighteenth District and First Section.

Also original land lots numbers Fifty-six (56), Fifty-eight (58), Seventy-three (73), Eighty-six (86), Ninety-one (91), Ninety-six (96), Ninety-nine (99), One Hundred Two (102), One Hundred Seventeen (117), One Hundred Twenty-two (122), and One
643 Hundred and Twenty-four (124), all being and lying in the Nineteenth District and First Section, and each lot containing One Hundred and Sixty (160) acres more or less, and all the foregoing being and lying in Towns County, State of Georgia, and being fee lands.

Also original land lots numbers Two Hundred Twenty-seven (227), Two Hundred Forty-three (243), Two Hundred Seventy-nine (279), and Two Hundred Ninety-two (292), all situated in the Sixth District and First Section.

Also original land lots numbers Fifty-seven (57), and Fifty eight (58) in the Seventh District and First Section.

Also original lands lots number One Hundred Twenty-eight (128), in the Ninth District and First Section.

Also original land lots numbers Two Hundred Thirty-two (232) Two Hundred Sixty-nine (269), Two Hundred Seventy-one (271) and Two Hundred and Eighty-seven (287), in the Tenth District and First Section.

Also original land lots numbers Forty-three (43), One Hundred

Forty-five (145), One Hundred Fifty-five (155), Two Hundred Thirteen (213), Two Hundred Sixteen (216), Two Hundred Sixty-three (263), Two Hundred Ninety (290), Three Hundred Eighty-five (385), Four Hundred Seventeen (417), Four Hundred Twenty-three (423), Four Hundred Forty-five (445), Four Hundred Fifty-seven (457) Four Hundred Ninety-five (495), Five Hundred Nineteen (519), Five Hundred Twenty-Seven (527), Five Hundred Sixty-four (564), Five Hundred Seventy-six (576), Five Hundred Ninety (590), Six Hundred Forty-eight (648), Six Hundred and Sixty-two (662), Seven Hundred Eighty (780), all in the Eleventh District and First Section.

Also original land lots numbers Sixty-nine (69), One Hundred and Eighty (180), One Hundred and Ninety-three (193), Two Hundred and Sixteen (216), and Two Hundred and Thirty-eight (238), in the Sixteenth District and First Section.

Also original land lots numbers Three Hundred and
644 Twelve (312), and Three Hundred Fourteen (314), in the Seventeenth District and First Section. All of the above situated in Union County, State of Georgia, and are fee lands.

Also one undivided one fourth interest in the following original land lots numbers One Hundred and Seventy-five (175), Two Hundred and Thirty-one (231), in the Seventeenth District and First Section, and numbers Eighteen (18), Twenty-three (23), and Two Hundred and Nine (209) in the Eighteenth District and First Section and numbers Eighty-four (84), and One Hundred Eighteen (118) in the Nineteenth District and First Section. All of the foregoing being any lying in Towns County, Georgia, and each lot containing One Hundred and Sixty (160) acres more or less.

Also a one fourth undivided interest in the following lands: Land lot number (90) in the Seventh District and First Section, land lot number One Hundred and Sixty-seven (167), in the Ninth District and First Section, land lots numbers Ninety-five (95) and Three Hundred (300) in the Tenth District and First Section, also land lots numbers One Hundred Seventy-one (171), Three Hundred Fifty-eight (358), Three Hundred Sixty-five (365), Four Hundred Thirty-three (433), Five Hundred Fifty-six (556), Five Hundred Fifty-seven (557), Five Hundred Fifty-nine (559), Six Hundred Sixty-three (663), Six Hundred Sixty-six (666), Six Hundred Seventy-eight (678), Eight Hundred and Four (804), Eight Hundred and Seven (807), all in the Eleventh District and First Section, Also lots numbers Thirty-five (35), and Two Hundred Fifteen (215), in the Sixteen District and First Section. Also land lots numbers Two Hundred and Twenty-five (225), Two Hundred and Fifty-five (255), all situated in the Seventeenth District and First Section and being and lying in Union County, State of Georgia.

Also al- the Walnut trees, all the Hickory trees above eight (8) inches in diameter, and all the Poplar, Lynn, Ash, Pine, Whiteoak, Redoak and Chestnut-oak trees, fourteen (14), inches and upward in diameter, which are not included and covered by the
645 Duckett contracts and options, and which are not especially excepted of record on and covering original land lots num-

bers Two (2), Three (3), Thirty three (33), Thirty-four (34), Thirty-five (35), Thirty-six (36), Thirty-seven (37), and Thirty-eight (38), all in the Sixth District and Second Section. Also original land lots numbers Three Hundred Seventeen (317), Three Hundred Eighteen (318) Three Hundred Nineteen (319), Three Hundred Twenty (320), and three Hundred and Twenty-one (321), in the Seventh District and Second Section. Also lots numbers Sixty-eight (68), Seventy (70), Seventy-eight (78), Seventy-nine (79), One Hundred Two (102), One Hundred Three, One Hundred Four (104), One Hundred Fifteen (115), One Hundred Thirty-eight (138), One Hundred Thirty-nine (139), One Hundred Forty-one (141), One Hundred Forty-six (146), One Forty Eight (148), One Hundred Fifty (150), One Hundred Forty Nine (149), One Hundred Fifty-one (151), One Hundred Seventy-four (174), One Hundred Seventy-six (176), One Hundred Seventy-nine (179), One Hundred Eighty-one (181), One Hundred Eighty-two (182), One Hundred Eighty-three (183), and Two Hundred and Fourteen (214), all in the tenth District and Second Section. Also original land lots numbers Nineteen (19), Twenty (20), and Fifty-three (53), in the Eleventh Doistrict and Second Section. The above diameters of timber being based as of Eighteen Hundred and Ninety (1890) the date the deeds to the same were made, executed and placed regularly of record.

Also al- the timber on one Hundred and Ten (110) acres more or less of land lot number Thirty-nine (39), in the Sixth District and Second Section, excepting therefrom the Chestnut-oak bark timber. Also an undivided half interest in and to all the timbers eight (8) inches and over in diameter on original land lot number Forty (40), and Thirty (30) acres more or less of land lot number Thirty-nine (39), both of same being and lving in the Sixth District and Second Section, said diameters being taken as of November 19th, 1890. Also all the timber on the West half of lot number Four (4), in the Sixth District and Second Section, containing Eighty (80) acres more or less. Also all the timber on the South Half of lot number
646 Thirty-three (33) in the Sixth District and Second Section, containing Eighty (80) acres more or less, and being all the timber eight inches and upwards in diameter as of November 19th 1899, excepting therefrom the Chestnut-oak bark timber. Also all the White Pine, Poplar and Oak timber except Six (6) board trees on original land lots numbers Thirty-nine (39), and One Hundred and Six (106), in the Tenth District and Second Section, to be removed before February 27th 1909. Also all the White Pine, Poplar and Oak timber on land lots numbers Sixty-nine (69) and Seventy (70) in the Tenth District and Second Section. Also all the Poplar Timber on land lots numbers Eighty-one (81) and Eighty-two (82) in the Tenth District and Second Section *Section*. Also all the Poplar and Whiteoak timber on original land lot number Eighty-three (83) in Tenth District and Second Section. Also all the Poplar and White-oak timber on Eighty acres more or less of land lot number Forty-eight (48) in the Tenth District and Second Section. Also all the Poplar and Cherry timber on land lots numbers Twenty (20)

and Fifty-three (53) in the Eleventh District and Second Section. Also all the timber on land lots numbers Two Twenty-seven (227) and Two Hundred Twenty-eight (228) and Two Hundred and Sixty-four (264), Also all the Poplar timber on land lots numbers Two Hundred and Three (203), Two Hundred and Four (204), Two Hundred and Thirty (230). Also all of the timber on Twenty-five (25) acres of land lot number Two Hundred Thirty-five (235), all the foregoing being and lying in the Twenty-fifth District and Second Section.

Also all the timber ten (10) inches and upward in diameter on Twenty (20) acres of original land lot number Sixty (60) in the Twenty-fourth (24) District and Second Section, Also all the White-oak Hickory and Poplar timber on One Hundred and Twenty (120) acres of original land lot One Hundred and Forty-five (145). Also all the timber eight inches and over in diameter on November 15th 1890 on One Hundred (100) acres more or less of original land lots numbers Two Hundred and Twenty-two (222) and
647 Two Hundred and Forty-six (246). Also all the Hickory, Poplar, Lynn, Maple, Walnut, Pine, White-oak and Red-oak trees Twelve (12) inches and upward in diameter on June 1st 1894, on One Hundred and Fifty (150) acres more or less of original land lot number Two Hundred and Twenty-two (222). Also all the Chestnut and other timber not included in Duckett Contract on Eighty (80) acres more or less of original land lot number Two Hundred and Sixteen (216). Also all the timber excepting Chestnut on One Hundred Sixty (160) acres of original land lot number Two Hundred and Fifteen (215), and Eighty (80) acres more or less of original land lot number One Hundred and Eighty-two (182), All of the foregoing being in the Seventh District and Second Section. Also all the timber on original land lot number One Hundred Thirty-seven (137) in the Twenty-sixth District and Second Section. All of the above being located and situated in Gilmer County Georgia, and covering certain varieties of timber only, and for a more specific description reference is made to the records in the Superior Court Clerk's office Gilmer County, Georgia.

Also all the Lynn, Poplar, White-oak, Red-oak and Chestnut-oak trees twelve inches and upward in diameter in 1896 on original land lot number Eighty-eight (88), and Eighty (80) acres more or less of original land lot number Fifty-seven (57), all situated in the Seventh District and Second Section of Fannin County, Georgia.

Also all the timber on land lots numbers One Hundred and Fourteen (114), One Hundred and Thirty-nine (139), One Hundred and Forty (140), One Hundred and Forty-three (143), One Hundred Forty-six (146), One Hundred Forty-eight (148), One Hundred Forty-nine (149), and One Hundred and Fifty (150), all in the Twenty-fifth District and Second Section, all to be removed by or before June 30, 1909, Also all the timber on original land lot number One Hundred and Thirty-seven (137), and all the timber on Fifty (50) acres of original land lot Two Hundred Thirteen (213), The foregoing being in the Twenty-fifth District and Second

Section, the timber on the Fifty (50) acres of original land
648 lot number Two Hundred Thirteen (213) to be roemoved by June 11th 1918, and all of the foregoing lying and being in Murray County, Georgia.

Also some Thirty-five Thousand (35,000) acres of timber, options and contracts, more or less, known as the "Duckett Options", covering certain varieties and species of timber on the lands all regularly recorded in the Clerk of the Superior Court's office, Ellijay, Gilmer County, Georgia and for further reference the said records are referred to wherein the above are more fully, completely and minutely set out and described. Also some Ninety-six Hundred and Thirty (9630) acres same options and contracts in Fannin County, Georgia, Also some Forty-three Hundred and Ninety (4390) acres more or less of the same in Pickens County, Georgia, all of which may be more fully defined and described by referring to the said records of said Superior Court's Clerk's office.

To have and to hold the said bargained easement, rights and privileges with all and singular, the rights, members and appurtenances thereof to the same being, belonging or in any wise appertaining to the only proper use, benefit and behoof of the said party of the second part its successors and assigns forever. And the said Lumber Company, party of the first part, for itself and its successors and assigns does hereby covenant to, and with the said Copper Company, party of the second part, its successors and assigns, that it is lawfully seized in fee simple of the lands hereinbefore described as its lands in fee, and that it has full power, right and authority to convey the said lands, and that it will forever warrant and defend the said bargained lands and the easements covering the same and the title thereto unto the said party of the second part, its successors and assigns, against the lawful claims of all persons whomsowver.

In witness whereof the said party of the first part has hereunto caused to be affixed its corporate seal and caused this Indenture to be executed by its President, by direction and authority of its Board of Directors.

[CORPORATE SEAL.] SHIPPEN BROS. LUMBER CO.,
By WILL H. SHIPPEN, *President.*

649 Attest:
FRANK E. SHIPPEN, *Secretary.*

Signed, sealed and delivered in the presence of:
ALMA LEVY,
[NOTARIAL SEAL.] JAMES E. FORGARTY,
Notary Public, Fulton County, Ga.

STATE OF GEORGIA,
County of Fulton:

On this 1st day of May, 1908, before me the undersigned authority, personally appear, Will H. Shippen, with whom I am personally acquainted and who by me being duly sworn says that he

resides at Ellijay, Gilmer County, Georgia, that he is President of Shippen Brothers Lumber Company, a corporation described in, and which executed the foregoing instrument: that he knows the corporate seal of said corporation; that the seal affixed to said instrument was such corporate seal and that the same was affixed thereto by orders of the Board of Directors of said corporation, and by vote of the majority of the stockholders of said corporation, and that he signed his name thereto by like authority.

[NOTARIAL SEAL.] JAMES E. FORGARTY,
Notary Public, Fulton County, Ga.

Recorded March 20, 1914. G. A. Curtis, C. S. C.

STATE OF GEORGIA,
Fannin County:

I, G. A. Curtis, Clerk of the Superior Court of said county—(which is a court of record), do hereby certify that the above and foregoing fourteen pages contain a true and correct copy of Easement contract from Shippen Brothers Lumber Co. to Tennessee Copper Company, as same appears of record in deed book "Z" pages 103 to 116 inclusive of the records of Fannin Superior Court.

Witness my hand and official seal of office, this 22nd day of August, 1914.

[Seal Clerk Superior Court, Fannin Co., Ga.]

G. A. CURTIS,
Clerk Superior Court, Fannin Co., Ga.

650 In the Supreme Court of the United States.

No. 1, Original.

THE STATE OF GEORGIA
v.
THE TENNESSEE COPPER COMPANY AND DUCKTOWN SULPHUR, COPPER & IRON CO., LTD.

The deposition of W. H. Shippen, given at Knoxville, Tennessee, on Friday, November 6th, 1914, by agreement of counsel for both parties to this cause, same being a continuation of deposition of this witness heretofore given in this cause at Atlanta, Georgia, on behalf of complt.

Said deposition is as follows:

(Over.)

651 Further cross-examination of W. H. SHIPPEN, a witness for the complainant, by Mr. W. B. Miller, pursuant to agreement of counsel.

By Mr. MILLER:

Q. Mr. Shippen, you gave your testimony in chief on behalf of the State of Georgia in this case some time ago, did you not?
A. I did.
Q. In which you were asked on cross examination about a contract that your Company made with the Tennessee Copper Company in New York?
A. Yes.
Q. Were you connected with the Shippen Brothers Lumber Company in May, 1907?
A. I was.
Q. You were the president of that company at that time, were you not?
A. Yes sir.
Q. At that time you wrote a letter to a Mr. Patton, advising of the success of Georgia's application for an injunction before the Supreme Court of the United States in this case, did you?
A. I do not know, in the absence of the letter. I think I would have to see that letter.

GENERAL DRAKE: I except to the question, for the reason that if there is such a letter it would be the best evidence, and as immaterial and irrelevant, and original evidence in this cause.

Q. Well, I have a certified copy of your letter that you wrote addressed to "My dear Mr. Patton", from Ellijay, Georgian, on May 15, 1907, and I pass it to you and will ask you to examine that and then say if you do not recognize that, sir, as a copy of the letter that

has been recently filed in litigation in Atlanta to which you are a party, and your company is a party?

652 GENERAL DRAKE: I except to any certified copy of any letter, or any statement or evidence relating thereto, for the reason that it is immaterial and original evidence in this case, if competent for any purpose.

A. I cannot tell you a thing about that, Mr. Miller, in the absence of that letter. This letter here is dated May 16, 1907. That is seven years ago or more.

Q. Mr. Shippen, are you cognizant of the fact that a suit has been brought against the Shippen Brother- Lumber Company by Charles E. Russell, et al., recently in the United States District Court of Atlanta?

A. I am.

GENERAL DRAKE: I except to this question and answer, because irrelevant and immaterial.

Q. Have you not made as many as half a dozen affidavits, and filed them in that case recently?

GENERAL DRAKE: I except to that for the same reason.

A. I have made several affidavits. I do not remember just how many?

Q. In that case, have you not, very recently?

A. Yes.

Q. And have you not seen the original of this letter written by you and addressed "My dear Mr. Patton" on file in that case, and read it?

A. I have not.

Q. Do you not know it was filed in the case?

A. I heard of some letter that was brought in after that case had been submitted and argued.

GENERAL DRAKE: I except to all that evidence as wholly irrelevant and immaterial.

Q. Who is the addressee of that letter, "My dear Mr. Patton"; what Patton was that?

A. I cannot tell you.

Q. Do you mean to say there was one of your stockholders that you were on sufficiently intimate terms with to address him
653 as "My dear Mr. Patton", and you do not know who he was?

GENERAL DRAKE: I except to the question, for the reason that there is no evidence that there is any "My dear Mr. Patton", a stockholder of Shippen Brothers Lumber Company, and as immaterial.

A. There are three Pattons, in fact, there are five or six Pattons who are stockholders of Shippen Brothers Lumber Company.

Q. I will read this letter into the record:

(Reading:)

"Shippen Bros. Lumber Co., Manufacturers of Band Sawn Lumber.
Specialties, Yellow Poplar Bevel Siding & Mouldings.
Poplar, White Pine and Oak.

W. H. Shippen, Pres. & Gen'l M'g'r; James Mitchell, Vice Pres.;
Fred Joyer, Treas.; F. E. Shippen, Sec'y.

Office and Store, Ellijay, Ga.,

May 16, 1907.

MY DEAR MR. PATTON: I have just reached home having stopped enroute. While in Cincinnati Tuesday, I had the following repeated from Ellijay: 'Superior Court Clerk, Washington, wires 'Hart injunction suit gained', when I wired you as follows: 'Supreme Court Clerk wires copper company injunction granted', which I herewith confirm. Am also handing you a clipping from Atlanta Constitution, which shows we have all we asked for. Judge Hart gives me full credit for the whole, and as to what the other side think of my efforts in the matter, would like for you to ask the attorneys of the copper company. By the way, it might be well for you to drop in on Martin Vogel, 170 Broadway, the next time you are in New York and feel him. You know nothing of the case, and see what he says. We ought to be losing no time now in going for damages in earnest, as our case is now made out. In addition, I consider the Shippen Brothers Lumber Company worth 25% more today
654 than it was with this thing going on. Now the stockholders have said little of the victory, but if they don't call this results, would like to know what name they have for it.

I thought about giving Mitchell and D. this information, while they were dickering with me about the sale of their stock, but it did not take me many moments to decide that I would not be doing the fair thing to withhold this information that came to me in my capacity as an officer of the company to work against them for my own private gain, so gave them the information in full, and am much surprised to relate they never seemed to see the point, and I never thought it incumbent on me to point it out to them at this particular time. Now it is my decided opinion that I should get busy at once and see what can be done about settlement of our claim with these people, and I am of opinion that they would settle with us promptly to get me out of the way and use my action to control the others who have claims against them. I should see their attorneys in New York at once, but cannot leave here with things in the shape they now are. Now, as to Mitchell, I am firmly of opinion that he and D have an understanding about their holdings, and one will hardly sell without the other. I am further of opinion they *that* both have been kicking up the rumpus and appeaing on side of the enemy in a hope to force a purchase. I did not have to hunt them about a purchase, they hunted me, and I had a time getting with Mitchell alone. When I finally did, I found him the toughest proposition to pin down to earth and keep on a subject I have ever been up against. He held out stiff for $50,000. When he saw

Dyer, they offered to take par for both interests. I was with M about all day and they only agreed to this at the depot just as I took train, and I wired you from Falmouth enroute as follows: 'Could have bought both interests or the one not wanted. Will write enroute Ellijay', which I herewith confirm. Now if you can shortly get Mitchell to Philadelphia or some other place, or find when he is to be there and let me meet him there without D, I feel
655 sure I can buy his stock alone and for something less than par. Of course such meeting must apparently be accidental on my part. I offered one-third cash and notes at one and two and five per cent for the balance with their stock for collateral if I bought, and they were satisfied at this. Please let me hear from you promptly on above. I think we should do business. Your uncle is sore and combed both you and I repeatedly. When he had the Supreme Court news, he remarked, it would not pay dividends. Now please do not repeat this to him, for I do not want to widen any breach.

Field told all over here that Frank and I were to be fired out at Cincinnati and was over twice during our absence for information that I hear he did not get. I may hear further from M and D, and with kind regards, I am,

Sincerely yours,

(Signed) WILL H. SHIPPEN.

I pen this as it is only for you and I fear to risk it through stenographer."

GENERAL DRAKE: I except to all this letter as being irrelevant and immaterial in this case.

Q. Now, Mr. Shippen, having heard that letter read, do you recall having written it?

A. I do not.

Q. You do not recall having written any such letter at any time?

A. No sir, I do not.

Q. Do you say that you did not write it?

A. I do not say anything of the kind. If I saw the letter I could answer you very quickly.

Q. And you say you do not know it had been filed in Atlanta?

A. No, I did not say that. I said there was a letter which was brought in there after the case had been—all the affidavits—the case was brought on affidavits—after all the affidavits had
656 been filed and argument had been begun and the case closed.

Q. Well, did you state at any time to either of the Mr. Pattons that you knew that Judge Hart who was at that time the Attorney General of Georgia, did give you credit for having won the controversy on behalf of the State of Georgia in this case?

A. I don't know that I did, but I do know that I did considerable work in that case. I worked on it pretty hard.

GENERAL DRAKE: I except to all of the evidence, as being irrelevant and immaterial.

Q. Did you succeed in buying this Mitchell and D stock that is talked here about in this letter?

GENERAL DRAKE: I except to that, for the reason that it is immaterial.

A. On advice of counsel, I decline to answer that as immaterial and irrelevant to this issue and affecting my private interests.

Q. What counsel did you refer to, on *whee* advice you are acting?

A. Counsel for the State of Georgia.

Q. That is Mr. Hill, who is here present associated with Mr. Drake?

A. Yes sir.

Q. He suggested that answer to that question, did he not?

A. He did.

Q. So you decline to answer that?

A. I decline to answer that.

Q. Well, now, you were president of Shippen Brothers Lumber Company on March 27, 1908, were you not?

A. I was.

Q. And at your suggestion there was a special meeting of your company called for the Manhattan Hotel, in the City of New York, on March 27th, 1908?

A. March 27, 1908? Yes.

657 Q. And you were present at that meeting?

A. Part of the time.

Q. The fact is that you signed the record as president of that meeting, the minutes?

A. I did.

GENERAL DRAKE: I except to all that evidence as being immaterial and irrelevant to the issues in this law-suit.

Q. Have you got a copy of those minutes?

A. I have.

Q. You have it with you, have you not?

A. I have.

Q. As I read from the paper that I have, let us see if you can verify it, and if so, I will ask you to file this one: (Reading:)

"Record of minutes of a Special Called Stockholders' meeting of the Shippen Brothers' Lumber Company of the city of Ellijay, Georgia, held by order of —— —— at Manhattan Hotel, in New York City, March 27, 1908.

Q. The meeting was called for the purpose of discussing settlement of claim for damages of this corporation against the Tennessee Copper Company.

"The following stockholders being present in person: James Mitchell, Fred J. Dyer, C. E. Patton, C. S. Russell, W. S. Reed, W. H. Shippen, James A. Drake, and the North Georgia Lumber Company by James A. Drake, President, also F. E. Shippen by proxy by W. H. Shippen, and H. J. Shippen by proxy by C. S. Russell. The same being all the stockholders of the Shippen Brothers' Lumber

Company. The usual notice of call for said meeting being waived by all stockholders. A general discussion ensued as to this corporation's claim against the Tennessee Copper Company. Mr. W. H. Shippen stated that he had been asked by the representatives of the Tennessee Copper Company to meet them in New York to discuss settlement of this corporation's claim against the Tennessee
658 Copper Company, that in pursuance of such request, did meet Mr. Martin H. Vogel, their counsel, in the matter, and on being asked by Mr. Vogel the amount of our claim, that he had asked and demanded $200,000 in compensation of this corporation's damages to date, that on hearing this amount Mr. Vogel stated that he was excessive in his demands, and that he did not represent the ideas of his stockholders and directors, and that he (Vogel) could settle with the others for a very small part of this figure, and that Mr. Vogel further stated that he had been approached by one of our party who had suggested to him a figure of $30,000.

Mr. Shippen stated that he had assembled the meeting to learn the stockholders' pleasure in the matter. It was decided to have Mr. Vogel come before the meeting and discuss at length the matter between us, and he accordingly appeared before our body and went into the matter between his corporation and ours, and asked our corporation to submit an offer. After Mr. Vogel left the meeting, Mr. Shippen stated that he had always asked the Tennessee Copper Company $200,000 and had never named a lower figure than this to them, and it was his opinion that this corporation should ask at least $100,000 in satisfaction of our damages to date, and that any offer should be to date and leave any future damages open. The discussion that ensued developed the fact that there was great diversity of opinion on this question among the various stockholders present, and that Mr. Shippen stated that he had now had his say and would retire and let the other stockholders present decide the matter themselves and would concur in anything that they might do. Mr. W. H. Shippen did retire and the following was the result of the deliberation.

It was unanimously voted that Mr. F. J. Dyer be authorized to report to the Tennessee Copper Company that in consideration of Fifty-Thousand Dollars this corporation will release it, the Tennessee Copper Company, from all claims for damages and grant to
659 it an easement permitting it to allow smoke and gas from its furnaces to pass over and on our lands at all future times, free from any claim for damages, and in case of the acceptance of this offer the president, W. H. Shippen, be and is hereby authorized to execute such a release, grant an easement leaving terms of payment of said Fifty Thousand Dollars to be adjusted by Mr. W. H. Shippen and Mr. F. J. Dyer. As the above was the conclusion of this meeting, Mr. W. H. Shippen for himself and by proxy for F. E. Shippen, fully concurred in the same.

W. H. SHIPPEN,
Pres. & Chairman."

Now that is a correct minute of the meeting which you prepared and signed, is it not?

A. Well, that is practically so; there are one or two little changes that do not cut any figure.

GENERAL DRAKE: I except to the minutes, and the question and answer, for the reason that it is immaterial and irrelevant, and seems to be introduced for no other purpose than attempting to impugn the motive of the State of Georgia in this case; and for the further reason that it appears to be a fishing venture to discover evidence in a law-suit that is now pending in Atlanta between some private individuals.

Mr. MILLER: It may have that appearance to you, but I disclaim any such intention with regard to the letter. I have no connection with the Atlanta litigation. It is only in connection with this case that we offer it.

Q. Pursuant to the minute which I have just read, your company, through you, did enter into a contract with the Tennessee Copper company while you were in New York on that trip, and that contract was dated April 1st, 1908?

A. I think there was such a paper. That paper, as I remember, was filed in escrow in some bank or trust company in New York City.

Q. Were you not aware, Mr. Shippen, that that contract has been filed in the Atlanta litigation, and is a public record now of the United States District Court in Atlanta?

660 A. Well, no, I am not; I have not seen those papers.

GENERAL DRAKE: I wish to make a general exception to all this evidence in regard to any papers that may be filed in the law-suit referred to, as the law-suit in Atlanta, or any contracts or letters that might have passed between Shippen Brothers' Lumber Company and any stockholders of that company, or any correspondence in connection therewith, as irrelevant and immaterial.

Q. Have you not, on behalf of your company, recently filed in this Atlanta litigation, your minute book—the minute books of your company?

A. I think the minute book was filed there.

Q. And in that way, only, as far as you know, that is by getting a copy of it, could counsel who is now cross-examining you have had a copy of that minute.

A. I don't know what your connections are, but the Tennessee Copper Company owns stock in our concern, and you might have gotten it through them.

Q. But you took good care to never let it creep into this record that the Tennessee Copper Company owned any stock in your company until it was brought out since your examination was given in this case before?

General DRAKE: I except to the form of that question, and also for the reason that it is immaterial and irrelevant.

A. The only reason on the face of the earth I had for keeping that quiet was at their earnest request. I did so for fear. I did so for fear the Georgia claimants would get jurisdiction in the State of Georgia for their claims against the Tennessee Copper Company and attach our stock.

Q. So you did keep the ownership of the stock in your company by the Tennessee Copper Company quiet at the instance of and for the benefit of the Tennessee Copper Company, did you not?

A. I did not make a public record of it.

Q. And you did keep that quiet because they asked you to do it?

661 A. I certainly did. I had no other reason for it.

Q. Now, you say you did make a contract in that resolution. I show you what purports to be a certified copy of that contract that you made in New York and that was acknowledged by you there, and ask you if you recognize it as such.

General DRAKE: I except to this contract, the introduction of this contract, for the reason that it is irrelevant and immaterial, or any quotations therefrom.

A. I cannot testify as to that. I know that the consideration is the same. It was $50,000, in four equal payments of $12,500 each.

Q. And the terms of payment are the same, are they not?

A. It seems so to me.

Q. Then as far as you are able to say, the paper I present you with is a substantial copy?

A. I do not know that. I have not read it over.

Q. Suppose you read it and see if you see anything in there that does not accord with your recollection of the document that you executed for your company.

A. I cannot say as to this. When this paper was executed, Judge Reed, who represented the North Georgia Lumber Company's interests in our company, was the attorney who represented the Shippen Brothers Lumber Company, or a stockholder; he was the attorney and a stockholder also, and he passed on this matter. It looks something like the paper, as far as I know, but I read it very hurriedly at the time, and I have not seen it since. The amounts are correct.

Q. And you did acknowledge the document before a notary there in New York?

A. That is my recollection, I acknowledged the document which was placed in escrow, and I have not seen that document from that day to this.

Q. And that was signed by the Tennessee Copper Company, signed on behalf of the Tennessee Copper Company by its then president, Mr. J. Park Channing, was it not?

662 A. I do not recall that.

Q. You say you have not seen that paper from that day to this?

A. I have not.

Q. Did you not know it was filed in the litigation in Atlanta previously referred to?

A. No sir, I did not. I never read all the papers filed there. My attorneys handled that matter.

Q. Now, instead of that contract being executed very hurriedly, as you say, in New York did you not, on behalf of your company and as its president, immediately after the contract was signed, sign and endorsement at the foot of it in these words: "It is hereby agreed pursuant to letters between the parties hereto that the closing of the within contract is adjourned to May 1st, 1908, at ten o'clock a. m., at the Piedmont Hotel, Atlanta, Georgia. This April 28, 1908."

A. I still reiterate that that contract was signed hurriedly, though conditionally. They were ready to return to another paper that was afterwards signed and agreed to in Atlanta. There were 1,200 deeds to be examined there and brought into that record, so that the conveyance would be in proper order, and it was postponed to that date so that information could be gotten up.

General DRAKE: I except to all the above question and answer for the reason that it is immaterial and irrelevant to this issue.

Q. No, instead of it being necessary to examine 1,200 deeds, it was necessary to consummate a purchase of certain stock in your company between you and the Tennessee Copper Company, and was that not the reason for the adjournment?

A. That is absolutely false. There is not one word of truth in it.

Q. Do you mean to say that it was not a part and parcel of the same arrangement whereby the $50,000 contract was made, that you and your brothers were to sell certain stock in your company to the Tennessee Copper Company?

663 A. Not a word of that is true.

Q. You did not do anything like that?

A. You say that was a part of this contract? It absolutely was not.

Q. I say, did you do anything like that?

A. Like what? What are you talking about?

Q. Making a sale of certain stock in your company, you and your brother, to the Tennessee Copper Company, in consideration of this $50,000 contract being signed?

A. No sir.

General DRAKE: I except to the question for the reason that it is immaterial and irrelevant and could not in any way reflect light on the issue in this case.

A. (cont'd) And again, now, about the stockholders' meeting there that you have the minutes of: My brother and myself owned one-third of the stock of our company; we were not in control; and I did everything in my power, as I testified heretofore, to prevent my company from executing that contract with the Tennessee Copper Company at the figure at which it was executed. We had a perfect row in our meeting there. I insisted that we not make any settlement with them at all, that we grant an easement in that property at no figure less than $100,000, which should be named for the dam-

ages at that time, but they thought differently, and after I left them and came back into the meeting they had suggested the figure of $25,000 for the damages, and I insisted on their raising that figure and finally got them to raise it to $50,000.

You speak of the sale of that stock after this arrangement had been made on April 3rd, I think it was, or sometime thereafter. I sold the Tennessee Copper Company certain shares of stock we had in our company at that time. That had nothing whatever to do with the transaction that you are now speaking of.

664 Q. In other words, the Tennessee Copper Company was looking for a substantial investment, and they bought this stock in your company without any regard whatsoever to the contract made just three days before between your company and them?

A. The contract that they made with our company at that time I think gave them an easement on the Shippen Lumber Company for all time, from the paper that you have just presented me, and I should think they would be very foolish, after they bought a thing once to buy it again.

General DRAKE: I except to all that evidence, as being irrelevant and immaterial.

It is stipulated that the General Drake referred to who is interested in the Shippen Lumber Company, is not General J. A. Drake, counsel in this case.

A. (cont'd): In further answer to Mr. Miller's question as to what may have operated in the minds of the officials of the Tennessee Copper Company to cause them to purchase the stock of the Shippen Brothers Lumber Company, will say I have no idea.

Q. You tell us that you have absolutely no idea?

A. I have no idea at all. They bought the stock and paid for part of it.

Q. What was stock in Shippen Brothers Lumber Company then selling for on the market?

A. I do not know of any sales being made. It is a close corporation; it is not quoted on the market, but the stock of Shippen Brothers Lumber Company at that time was worth $200 easily, on the books.

Q. But what did you pay for it? You bought some at that time?

A. I did not buy any at that time.

Q. I just asked you if you did not buy what was known as the Mitchell and D stock in that letter, and you declined to answer.

General DRAKE: I except to the question as an inference of what the transaction in stock of the Mitchell and D was at this time, and the facts are, as I understand them, from the

665 answers heretofore made, that it was at an entirely different time; and further for the reason that it is immaterial to the issues in this law-suit.

Mr. HILL: That same question is in the record, and the witness answered it.

Q. In other words, this is one that you declined to answer on the advice of counsel?

A. Yes, because some question is pending in another court, as will be brought out there.

Q. Well now, that contract about the sale of your stock which you say was made with the Tennessee Copper Company, was in reality in order to cover up the transaction, the true transaction was made in the name of a man named Oscar B. Van Sant?

A. Well, now, as to that, I can only give an opinion, I do not know why it was done. The paper itself shows what it is.

Q. Did you know that paper had been recently filed in the Atlanta litigation?

A. I have not seen it or heard — it.

Q. Now, I show you what purports to be a certified copy of that document signed by William H. Shippen and Frank E. Shippen by William H. Shippen, Attorney and Oscar B. Van Sant, of date April 3rd, 1908, and will ask you if you recognize that as a substantial copy of the contract by which you and your brother sold to Mr. Van Sant something over 1500 shares of stock in your company?

A. We had a contract with Oscar B. Van Sant to sell certain stock in our company. I do not carry that in my head. I do not know whether that is a correct copy of it, or not.

Q. You are not prepared to say that it is not?

A. No, I am not. I haven't anything here to compare it with.

Q. As far as you know or are prepared to answer, this is a substantial copy, is it not?

A. No, I would not say that.

Q. Do you say there is anything in this paper that does
666 not appear on the one which you signed?

A. Let me have the paper. This looks like it, and if it is a certified copy, I guess it is correct.

General DRAKE: I except to it as being irrelevant and immaterial.

Q. I notice on this certified copy that I have passed to you an endorsement in these words: "The Tennessee Copper Company guarantees the full performance of the above contract on the part of the party of the second part." Now, the Tennessee Copper Company did guarantee its performance by Mr. Van Sant, did it not?

A. I understand so.

Q. And lest the Tennessee Copper Company might not have the power or authority to execute such a guarantee, Mr. Frederick Lewisohn, at that time a large stockholder in the Tennessee Copper Company, signed an endorsement on the same paper in these words: "I hereby guarantee that the Tennessee Copper Company has the legal power to guarantee the above contract, and that the same is a legal and binding guarantee as to the Tennessee Copper Company." That is true?

A. Frederick Lewisohn did guarantee that paper in some such language, as I remember it.

General DRAKE: We except to all that evidence, as immaterial and irrelevant to the issues in this case.

Q. Now, on the 24th of September, 1914, in the city of Atlanta, you gave an affidavit in the case of Charles S. Russell, et al., complainants, v. Shippen Brothers Lumber Company, et al., defendants, pending in the United States District Court in the Northern District of Georgia for the Northern Division, did you not?

A. Why, I think I answered that question before; I think there were several affidavits.

667 Q. Well, I have a certified copy of that affidavit, and I want to read some of the statements therein and ask you if you recall that they are as you then gave them, and if they are correct. One is in these words:

"For years deponent with his brother labored with the other owners of timber in North Georgia, with legislators, with the legislature itself, with committees from the legislature, and different officials of the State, and in the scientific study of the character of the fumes, the extent to which they would go and the injury inflicted."

A. I certainly have.

Q. That is true?

A. That is true, absolutely.

Q. Then this: "After almost numberless appeals to the public authorities, to the newspapers, to scientific magazines, and using every influence in the world that could be brought to bear upon the situation, deponent with his brother finally got the movement into a compact, well organized condition where it presented a formidable front to the further infliction of the damage."

A. I did everything in my power to try to get that damage arrested, and I am trying to do it now.

Q. That quotation that I have read is correct?

A. It certainly is.

Q. And then this: "The State of Georgia was finally induced, almost entirely by the labors of deponent and his brother, to file a bill in the United States Supreme Court."

A. Well, that is going quite far. I think there were a great many others helped me. I don't think I want quite that much credit.

Q. But you made an affidavit recently that contained that statement, did you not?

A. If that is a certified copy of it, I suppose I did.

General DRAKE: I except to all that evidence, as irrelevant, and for the further reason that it is an attempt to impugn the motives of the State of Georgia.

668 Mr. MILLER: No, it is an attempt to explain the present litigation.

Q. Now, the litigation which that statement has reference to as having been undertaken by the State of Georgia and induced by

you and your brother, is this present case in which your deposition is being given, is it not?

A. If this is the original case brought down to date? It may be.

Q. In other words, you say that you don't know whether the case wherein you are giving your deposition is the one to which you referred in that affidavit, from which I have just read?

A. I think this case itself will answer that.

Q. I would like for you to answer it. Do you not know that you are giving your deposition in that same case now to which your affidavit referred?

A. I am asking you, is it the same case?

Q. This is the same case, if you want to know, Mr. Shippen, that was then pending, and to which the letter addressed "My dear Mr. Patton" had reference, in 1907. Now, is it not a fact that you have induced the State of Georgia to take up or bring another case in the Supreme Court, besides the one before the Supreme Court of the United States?

A. I think there was another one.

Q. Before what other court?

A. I don't remember just which court, but there was a former effort.

Q. At any rate, this is the only suit that you were successful in getting the State of Georgia to bring, which is the one before the Supreme Court of the United States; is that right?

A. It is the only case that I know of. There was another effort started there. I don't know just what became of it.

Q. I will read another sentence from the affidavit.

669 General DRAKE: I except to all that evidence as being irrelevant and immaterial.

Q. "In the preparation of the trial, deponent procured and caused to be procured thousands of affidavits, which when printed filled several volumes of printed matter as a part of the record of the litigation."

Did you ever procure thousands of affidavits in any other case except the one wherein you are giving your deposition now and which was brought in the name of the State of Georgia?

A. Yes, I got affidavits in a former case, but I do not know what became of them. I think there were two efforts made.

Q. You mean to say there were two suits brought before this in the Supreme Court of the United States?

A. I do not know how far the first effort went, but there were two efforts before the legislature. The legislature took it up once before.

Q. Mr. Shippen, when you made this affidavit less than two months ago in the City of Atlanta, to what litigation did you refer as having labored in to the extent of having procured several thousand affidavits?

A. I procured several thousand affidavits, if this is a continuation of the original case before the Supreme Court of the United States.

This case was first heard on affidavits, and I assisted in procuring thousands of those affidavits that were presented to that court.

Q. The next sentence: "He visited and traveled all over several counties of North Georgia obtaining these affidavits with reference to the existence of the smoke."

A. I did.

Q. The next sentence: "This litigation resulted in the adjudication by the Supreme Court of the United States that a nui-
670 sance existed which should be stopped."

A. Well, the records will show that.

Q. And you know now that you were referring to this present litigation, do you not?

A. That is the only one that the court passed on that I know of.

Q. The next sentence: "The litigation of course very seriously affected the two copper companies mentioned." You thought that, did you not?

A. Yes.

Q. You thought that it did seriously affect those companies?

A. I certainly did.

Q. And thereupon immediately wrote Mr. Patton to go to New York and see Mr. Vogel?

A. No, Mr. Vogel had approached me half a dozen times during the time that I was connected with the State's case, and—I don't know particularly that Mr. Vogel did, but the Tennessee Copper Company and Mr. Channing, the president of the Tennessee Copper Company—and I positively refused to listen to one word of settlement until after the State's case had been finally disposed of, and after it had been disposed of and a verdict rendered in that case, I thought, in perfect good faith, that the State of Georgia would take up the settlement of our damages against the Tennessee copper companies when they had repeatedly asked us to contract with them about a settlement, and I felt that I could not do it until the State's case had finally been disposed of, and when that was done, I thought we were at perfect liberty to take up with the copper companies the matter of our private settlement with them, which we did, and that is why we spoke of taking up the matter now and pushing it vigorously, after the State's case had been decided.

Q. The Mr. Vogel that figures in that letter and in the
671 minutes of your meeting was the general counsel of the Tennessee Copper Company, residing in New York, was he not?

A. I so understood; I have always understood that.

Q. You saw him there in New York, did you not?

A. Yes, and I saw him in Atlanta, and I saw him before the legislature there, and I saw him in our territory.

Q. And when you made this arrangement through Mr. Vogel to sell this large block of stock owned by you and your brother to Mr. Van Sant for the benefit of the Tennessee Copper Company, you then ceased your activities against the Tennessee Copper Company, did you not?

A. I ceased my activities against the Tennessee Copper Company the very minute the Shippen Brothers Lumber Company granted them an easement on its property and got my contract out of them for $50,000 for the same. It was distinctly understood and agreed there at that time at that meeting, that I was to cease my activities against the Tennessee Copper Company, as a part of the consideration.

Q. And it was agreed further that the Tennessee Copper Company might run full blast as it had been doing up to that time, without even erecting an acid plant?

A. The contract that was signed at that time with it will show.

General DRAKE: We except to all that evidence as irrelevant and immaterial.

Q. Now, subsequently, there was paid to you and your brother under this Van Sant contract, $78,000 by one Henry I. Gaskill, was there not?

A. Well, I do not know that Henry I. Gaskill paid it. We got $78,000 on March 6th, I think it was, 1913, on account of that contract.

Q. And did you not give a receipt to Henry I. Gaskill?

A. I do not recall just who the receipt was given to. I gave a receipt at the time for it, I know, as I remember.

672 Q. Was that receipt filed recently in Atlanta?

A. I do not know; I never saw it.

Q. I show you a purported certified copy of it, of date March 6th, and ask you if that refreshes you in any way about the receipt that you signed?

A. Well, I cannot recall the paper at this time. I know we gave a receipt for $78,000 and the money was paid. That was March 6th, 1913; that is the proper date.

Q. It is a very significant circumstance, and you assume it is correct, is that not true?

A. I cannot say anything to the contrary.

Q. Now, on March 6th, 1913, did not Mr. Walter M. Briggs, as treasurer, give to you and your brother a receipt for 520 shares of the capital stock of Shippen Brothers Lumber Company?

General DRAKE: I want to except to all this evidence, because irrelevant and immaterial, and for the further and especial reason that it is not in rebuttal to anything heretofore taken in this hearing.

Q. Now, in this same Atlanta litigation, you and your brother F. E. Shippen made an affidavit on the 29th of September, 1914, in the City of Atlanta, and verified it before one Zoe Davis, notary public, did you not?

A. As I testified before, Mr. Miller, we made several affidavits there. I do not recall just what.

Q. I present you now a certified copy of the following documents bound together under the seal of the Clerk of the United States District Court in Atlanta, to-wit:

Letter from Will H. Shippen to "My dear Mr. Patton", of date May 16, 1907; the minutes of the special meeting of your company held in New York on March 27, 1908; the contract between your company and the Tennessee Copper Company of April 1st, 1908; the acknowledgment thereto and the endorsements thereon to which your attention has been directed previously; the contract of sale between yourself and your brother of the one part, and Oscar

673 V. Van Sant of the other part, with the guaranties and endorsements thereon, to which your attention has been heretofore directed, and the affidavit by you of September 24, 1914, note before A. H. Bancker, a notary public of Fulton County, Georgia, from which I have read some few extracts to you, the receipt of March 6th, 1913, in favor of Henry I. Gaskill; the receipt of March 6th, 1913, signed by Walter M. Briggs, treasurer, for 520 shares of stock in your company, and the joint affidavit of yourself and your brother F. E. Shippen of date September 29, 1914, before Zoe Davis, notary Public, and I will ask you to file the same as exhibit No. 1 to this cross-examination.

General DRAKE: I except to the introduction of this exhibit and all the contracts, letters and papers therein referred to, for the reason that it is irrelevant, incompetent, and in no way rebuttal in this case. While I agree it is very interesting reading, and entertaining, I do do not think it ought to be in this record.

Mr. MILLER: I ask that it be made exhibit No. 1 to your testimony, and I will ask the commissioner to so mark it.

A. I do so attach it, without attempting to say that it is an exact copy.

Q. But if there is anything incorrect about it, you do not recognize it, do you?

A. I do not. I want to get everything exactly as it is; if you will let me examine this, and if I find anything that appears to me at this distance from the original papers to be wrong, I will call your attention to it.

Q. I will be glad to have you do that, and if you find any inaccuracy about it, to point it out before we leave.

Now, Mr. Shippen, is it not true that it was a part and parcel of the contract between you and your brother and the representatives of Mr. Van Sant or the Tennessee Copper Company, in connection with the negotiations to which I have referred in your previous examination, that you were to be retained in the position of

674 president of your company for a number of years immediately succeeding that contract?

A. The voting power of that stock that we sold was to remain in us, which gave us control.

Q. The Tennessee Copper Company entered into a contract by which you were to be retained, or at least they were to aid in retaining you as president of the company?

A. The contract itself shows that the voting power of that stock remained in us until finally paid for.

Q. And it has been very largely paid for?

A. There is some $60,000 odd due, as I remember.

Q. The balance has been paid?

A. The balance has been paid, with the exception of some $60,000 which we are now suing for, and I am perfectly sure that all this litigation that Mr. Miller has remarked about and called attention to has been brought up and instituted by the Tennessee Copper Company. I give them credit for the whole thing.

Q. That litigation was only brought in September, this last September, was it not?

A. I think that is correct.

Q. Now, up until you had a difference with the Tennessee Copper Company about paying for that stock just a few months back which culminated in that litigation, the relations between you and your company were very friendly, were they not?

A. The Shippen Brothers Lumber Company have made a contract with them to give them an easement on its property, as your paper here recites.

Q. I say your relations were very friendly?

General DRAKE: We except to all that as being irrelevant.

A. They had settled the damage for all time. I imagine that would constitute a friendly arrangement.

Q. They settled the damage for all time, and they agreed to help employ you as president of your company; that made a friendly arrangement, did it not?

675 A. They could not do otherwise, with the voting power of that stock remaining in us.

Q. You and your brother immediately bought a lot of stock on the outside, after the Tenneessee Copper Company took that over through Van Sant, you bought a large lot of stock, did you not?

A. We bought some stock at that time.

Q. In other words, you sold your stock at away in excess of par, and you bought stock below par about the same time?

General DRAKE: I except to the question as irrelevant and immaterial.

Q. That is correct, is it not?

A. I will have to answer that question by refusing on the same ground as the question heretofore asked. It relates to matters that are pending in another litigation.

Q. It don't change the facts, though, if you bought the stock. Your declining to answer it is still on the advice of counsel?

General DRAKE: I object, because it is an issue in another lawsuit.

A. It is a private matter, and hasn't anything to do with this case.

Q. Mr. Shippen, during the period of years that have intervened since the Tennessee Copper Company became a very large stockholder in your company, it has been a keen competitor of the Ducktown Copper, Sulphur and Iron Company in the production and sale of copper, has it not?

A. I don't know anything about that.

Q. Don't you know they are engaged in smelting identically the same ores, and that they are selling in the same markets?

A. No sir, I think that witneses have shown that your ores are absolutely different.

Q. Is it not true, Mr. Shippen, that the Tennessee Copper Company and yourself, or your company, you, representing your company, and the management of the Tennessee Copper Com-
676 pany have had a definite secret agreement during the past few years, by which you were, both through your company and your labors, to harass the Ducktown Copper Company?

A. Nothing of the kind.

Q. And is that not the spring to this very application for an injunction before the Supreme Court of the United States?

A. No sir. The Tennessee Copper Company have agreed to care for their fumes during the growing season, and they entered into a contract with the State of Georgia to that effect, and the Ducktown Copper, Sulphur & Iron Company, the present one which is before the court, has positively refused to contract with the state or to care for its fumes in any way whatsoever, and has ignored us and treated us with disdain.

General DRAKE: I want to except to the question, for the reason that it seeks to impugn the motive of the State of Georgia, which acted through its legislature and governor and attorney general in the bringing of this motion before the court, and for the further reason that it is immaterial and irrelevant.

Q. At the time of this contract with the Tennessee Copper Company for the sale of this stock by you and your brother, and at the present time, what is the capital of your company?

A. What do you mean?

Q. What is the capital stock, how many shares are there outstanding of the capital stock?

A. There are 4,560 shares of $100 each.

Q. And there were approximately that many shares at the time of this contract, and have been since?

A. That is as I understand it.

Redirect examination.

By General DRAKE:

Q. You have been asked about affidavits that you helped to procure in the original hearing of this case before the Supreme Court. I will ask you if the result of those affidavits that you obtained
677 in this case in the Supreme Court did not decide the suit favorably to the contention of the State.

A. I think the records will show that.

Q. I will ask you further, Mr. Shippen, if you was not just one among hundreds and thousands of people in North Georgia who were seeking to arrest this nuisance of smoke injury?

Mr. MILLER: I suggest that the question is slightly leading and suggestive,

A. The whole of that country was roused up on this question, more than I have ever seen it on any question since I have been in that State. I took a leading part in that, as much as I could, and assisted them in every way, and every person there of any note that had any property at all, and had any intelligence, was right in line with the efforts of the State and myself.

Q. Further, I will ask you if you know, that after you ceased your efforts against the Tennessee Copper Company, whether or not the citizens of North Georgia still pursued their remedy and tried to cause the cessation of that smoke?

A. They did, with the result that the Tennessee Copper Company did enter into an agreement with the State of Georgia to care for its fumes during the growing season.

Q. State whether or not the State of Georgia also offered to the Ducktown Copper Company a way by which they were to treat with the people of North Georgia, and whether or not it refused to do so?

A. It certainly did. I myself helped to prepare a resolution that was put through the Georgia legislature, offering the Ducktown Copper, Sulphur & Iron Company the same sort of a contract that we gave the Tennessee Copper Company, excepting at a very much less figure than that named for the Tennessee Copper Company, and the Ducktown Sulphur, Copper & Iron Company positively refused to give us any guarantee as to what it would do with its gas,
678 or whether it would care for its gas or do anything. It said it was not doing any damage whatsoever, but that the other company was doing it all. I further want to say that I did not want to do this company any injury, and I did not feel any more favorably inclined toward the Tennessee Copper Company than I did toward the Ducktown Sulphur, Copper & Iron Company if it had used the same efforts to care for its fumes that we believe the Tennessee Copper Company used to care for its fumes.

Q. State from what standpoint you have been acting in this case?

A. I have been acting in perfectly good faith to try to relieve the vegetation of North Georgia and stop damage from these fumes.

Q. You are a man of family. Where is your home?

A. I have a family of six, and my home is at Ellijay, Gilmer County, Georgia. In fact, almost everything I have is invested in that section. I have been vitally interested in the outsome of this case because I feel that all North Georgia is dependent on whether or not these fumes shall be stopped or arrested, or whether this damage shall continue.

Q. You were asked about a lot of stock that you have sold in your company, especially as to voting power. I will ask you if that was not put up as collateral to secure the balance of the payment, and the voting power was a part of it that you retained?

A. The contract will plainly show that the purchasers of this stock agreed to pay for it in installments extending over a period of some six years, and that this stock as paid for was to be deposited

in escrow, and the voting power of that stock was to remain in my brother and myself until it was finally paid for and the contract fully complied with for the purchase of the entire number of shares called for in that written contract.

Q. I do not understand you, then, to say that the Tennes-
679 see Copper Company gave you the perpetual right to vote that stock?

A. The contract will show plainly that we had the right to vote the stock until it was finally paid for.

Q. And that is all?

A. That is all.

Recross-examination.

By Mr. MILLER:

Q. You say the Tennessee Copper Company has been doing so beautifully with its fumes down there. Just what is the output of sulphur dioxide from the Tennessee Copper Company, and to what extent are they reclaiming that?

GENERAL DRAKE: I except to that question, as eliciting original evidence; as evidence not in rebuttal; the witness is not qualified to testify, he knowing nothing about the subject.

A. In fact, I cannot tell you anything about the output of the Tennessee Copper Company except just what I have heard. I do not know anything about it.

Q. You volunteered the statement in your examination just now by General Drake, that the Tennessee Copper Company was taking care of its fumes.

A. It has a contract to that effect with the State of Georgia.

Q. Oh, yes, that's what you mean?

A. That is exactly what I mean. It is of record and filed in the Supreme Court in the original case.

Q. You are cognizant of the fact that the Ducktown Copper Company has filed in this record a statement under oath of its stati-ticians and its management showing exactly what its operations are, the process, the output, and the reclamation, and you are also cognizant of the fact, as I believe you have been present at the taking of all the testimony, that the Tennessee Copper Company
680 has not filed a single one, and nobody knows what it is doing, from this record.

A. As I understand it, the Tennessee Copper Company is not before the Court on this motion or this action.

Q. No.

A. And as to what they are doing, or what they have filed, I do not know anything about that. Again, I was not present at the taking of all the testimony, and I do not know a thing about what you have just related regarding your company having filed these figures and estimates as to their output, reclamation, etc.

Q. Then when you stated that the Tennessee Copper Company

was taking care of its output, you stated something you did not know anything about, did you not?

A. When I stated that, I do know absolutely that the Tennessee Copper Company has entered into a written contract with the State of Georgia, whereby it has specifically agreed to care for its fumes during the growing season, and that contract is filed of record.

Q. If it is caring for all of its fumes, why does it pay the State of Georgia an annual amount of several thousand dollars?

GENERAL DRAKE: We except to that, because it is an argument with the witness, and not competent.

A. I would like to answer it, what operated with the——

GENERAL DRAKE: I object to any further argument in this case.

Q. You would like to answer just what operated with what power?

A. With the Georgia legislature and the people who had charge of that at the time we induced them to take action.

Q. Tell us about that, what factory was it that operated with the legislature?

A. The small amount that you speak of there was for leak-
681 age and for what might occur during the winter months. The conifers carry their leaves during the whole year, and they could be affected. It was not an easement that the State of Georgia granted the copper company. The main consideration was its specific agreement to care for its fumes during the growing season.

Redirect examination.

By GENERAL DRAKE:

Q. I want to ask you a few questions in regard to the irrelevant matter that was asked you by Mr. Miller and which I objected to when you were put back on the stand by Mr. Miller. The suit that Mr. Miller referred to in which you were complainant against the Ducktown Sulphur, Copper & Iron Company, please state what the purpose of that bill was, and what the relief sought in it was?

A. It asked for injunctive power, and did not ask for damages. We wanted the damage stopped. We wanted relief.

Q. You were seeking the same thing that the State is seeking in this case?

A. As nearly as possible. We did not ask for damages. We simply wanted to get the evil stopped. The State of Georgia had gotten out an injunction and for some reason would not have it enforced, and we wanted to get the evil stopped there. We asked for an injunction, but did not ask for any damages whatsoever.

GENERAL FOWLER: Question and answer objected to, because the record is the best evidence.

Q. Do you know that old fellow who testified here the other day, M. S. Clayton, who swore he would not believe you on your oath?

A. I do.

Q. How long have you been knowing him?

A. About 15 years.

Q. Do you know whether or not he has had ill feeling toward you; if so, tell about it.

682 A. He was county surveyor in our county there, and we had a number of trespass cases where people went on our lands and stole timber, and we employed Mr. Clayton in his official capacity as county surveyor to go and run those lines, and paid him his regular fees for it, and he came into the office and reported he had established the lines, and when he would go into court he would forget all about running the lines. He would not swear to anything.

Q. For that reason did you discharge him and incur his ill will?

A. I did. And when he was county surveyor, we went and got Mr. Peter Hyatt to do the work, and I told him there that I would not believe this man Clayton on oath, and I wanted Hyatt to do the work so we could rely on a person sticking to his representations, what he had done, and what he was paid for.

Q. Do you know that because of the fact that you stated you would not believe him on his oath, that he got mad at you?

A. Yes, and I think he is trying to get back at me in my own coin.

Q. Did the settlement or sale of the stock referred to to the Tennessee Copper Company, or the settlement of the Shippen Lumber Company's case against it have anything to do in 1905 or now with your relations to this law-suit?

A. None whatever. I was instrumental in putting a bill through our legislature which offered this company very much better terms than the contract the State made with the Tennessee Copper Company, and although the Tennessee Copper Company had paid myself and my brother $175,000 for stock in our company, and had paid Shippen Brothers Lumber Company $50,000, we were just as anxious to have this company treated in the same light as the Tennessee Copper Company had been treated, if not in a better light. We wanted the damage stopped. That was all we were after. We wanted the smoke damage stopped in the State, and that is all we asked in the suit we now have against these people. That

683 is all I have ever wanted. Before we finish I would like to enter a protest against the ungrammatical language attributed to me by the stenographer who took the State's evidence in this case.

And further deponent saith not.

W. H. SHIPPEN,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 6, 1914.

R. S. C. HUTCHINSON,
Commissioner.

Mileage.....260.

I, R. S. C. Hutchinson, Commissioner, hereby certify that I correctly took and transcribed the deposition of the within witness.

H. S. C. HUTCHINSON,
Commissioner.

684 EXHIBIT No. 1, TO CROSS-EXAMINATION OF W. H. SHIPPEN.

R. S. C. Hutchison, Com'r.

Shippen Bros. Lumber Co.

Manufacturers of Band Sawn Lumber.

Specialties Yellow Poplar, Bevel Sidings & Mouldings.

W. H. Shippen, Pres. & Gen'l Mgr.
Jas Mitchell, Vice pres.
Fred Joyer, Treas.
F. E. Shippen, Sec'y.

Poplar
White Pine
&
Oak.

OFFICE & STORE, ELLIJAY, GA., May 16, 1907.

MY DEAR MR. PATTON: I have just reached home having stopped en route. While in Cin'ti Tuesday, I had the following repeated from Ellijay— Superior Court Clerk Washington wires Hart injunction suit gained," when I wired you as follows:—"Supreme Court Clerk wires Copper Co. injunction granted" which I herewith confirm. Am also handing you a clipping from Atlanta Constitution which shows we have all we asked for. Judge Hart gives me full credit for the whole & as to what the other side think of my efforts in the matter, would like for you to ask the Att'ys of the Copper Co. By the way, it might be well for you to drop in on Martin Vogel, 170 B'y the next time you are in N. Y. & feel him. You know nothing of the case & see what he says. We ought to be loosing no time now in going for damages in earnest as our case is now made out. In addition, I consider *that* the Shippen B. L. Co. worth 25% more today than it was with this thing going on. Now the stockholders have said little of the victory but if they don't call this results, would like to know what name thay have for it.

I thought about giving Mitchell & D. this information while they were dickering with me about the sale of their stock but it did not take me many moments to decide that I would not be
685 doing the fair thing to withhold this information that came to me in my capacity as an officer of the Co. to work against them for my own private gain so gave them the information in full & am much surprised to relate they never seemed to see the point & I never thought it incumbent on me to point it out to them at this particular time. Now it is my decided opinion that I should get busy at once & see what can be done about settlement of our claim with these people & I am of opinion that they would settle with us promptly to get me out of the way & use my action

to control the others who have claims against them. I should see their Att'y in N. Y. at once but cannot leave here with things in the shape they now are. Now as to Mitchell, I am firmly of opinion that he & D. have an understanding about their holdings & one will hardly sell without the other. I am further of opinion that they both have been kicking up the rumpus & appearing on the side of the enemy in a hope to force a purchase. I did not have to hunt them about purchase, they hunted me & I had a time getting with Mitchell alone. When I finally did, I found him the toughest proposition to pin down to earth & keep on his subject I have ever been up against. He held out stiff for $50,000. When he saw Dyer they offered to take par for both interests. I was with M. about all day and they only agreed to this at the depot just as I took train & I wired you from Falmouth en route as follows: "Could have bought both interests or the one not wanted will write en route Ellijay" which I herewith confirm. Now if you can shortly get Mitchell to Phila. or some other place or find when he is to be there & let me meet him there without D. I feel sure I can buy his stock alone & for something less than par. Of course such meeting must apparently be accidental on my part. I offered ⅓ cash & notes @ 1 & 2 & 5% for the balance with their stock for collateral if I bought & they were satisfied at this.

686 Please let me hear from you promptly on above. I think we should do business. Your uncle is sore and combed both you & I repeatedly. When he had the Supreme Court news he remarked, it would not pay dividends. Now, please do not repeat this to him for I don't want to widen any breach.

Field told all over here that Frank & I were to be fired out at Cinti. & was over twice during our absence for information that I hear he did not get. I may hear further from M. & D. & with kind regards I am,

Sincerely yours,

WILL H. SHIPPEN.

I pen this as it is only for you & I fear to risk it thro' stenographer.

687 Record of Minutes of a special called Stock Holders meeting of the Shippen Bros. Lumber Co. of the City of Ellijay, Ga., held by order of —— ——, at Manhattan Hotel in New City, March 27, 1908.

The meeting was called for the purpose of discussing settlement of claim for damages of this corporation against the Tennessee Copper Company.

The following stockholders being present in person, James Mitchell, Fred J. Dyer, C. E. Patton, C. S. Russell, W. S. Reed, W. H. Shippen, James A. Drake, and the North Georgia Lumber Company by James A. Drake, President, also F. E. Shippen by proxy by W. H.. Shippen and H. J. Patton by proxy by C. S. Russell. The same being all the stockholders of the Shippen Bros. Lumber Com-

pany. The usual notice of call for said meeting being waived by all the stockholders. A general discussion ensued as to this corporation's claim against the Tennessee Copper Company. Mr. W. H. Shippen stated that he had been asked by the representatives of the Tennessee Copper Company to meet them in New York to discuss settlement of this corporation's claim against the Tennessee Copper Company, that in *persuant* of such request did meet Mr. Martin H. Vogel, their counsel in the matter and on being asked by Mr. Vogel the amount of our claim that he had asked and demanded Two Hundred Thousand Dollars in compensation of this corporations damages to date, that on hearing this amount Mr. Vogel stated that he was excessive in his demands and that he did not represent the ideas of his stockholders and directors, and that he (Vogel) could settle with the others for a very small part of this figure, and that Mr. Vogel further stated that he had been approached by one of our party who had suggested to him a figure of ($30,000.00).

Mr. Shippen stated that he had assembled the meeting to learn the stockholders' pleasure in the matter. It was decided to have Mr. Vogel come before the meeting and discuss at length
688 the matter between us, and he according- appeared before our body and went into the matter between his corporation and ours and asked our corporation to submit an offer. After Mr. Vogel left the meeting, Mr. Shippen stated that he had always asked the Tennessee Copper Company $200,000.00 and had never named a lower figure than this to them, and it was his opinion that this corporation should ask at least $100,000.00 in satisfaction of our damages to date, and that any offer should be to date and leave any future damages open. The discussion that ensued developed the fact that there was great diversity of opinion on this question among the various stockholders present and that Mr. Shippen stated that he had now had his say and would retire and let the other stockholders present decide the matter among themselves and would concur in anything that they might do. Mr. W. H. Shippen did retire and the following was the result of the deliberation.

It was unanimously voted that Mr. F. J. Dyer be authorized to report to the Tennessee Copper Co. that in consideration of Fifty Thousand Dollars this corporation will release it, the Tennessee Copper Company, from all claims for damages and grant to it an easement permitting it to allow smoke and gase from its furnaces to pass over and on our lands at all future times free from any claim for damages and in case of the acceptance of this offer the president, W. H. Shippen, be and he is hereby authorized to execute such a release, grant an easement leaving terms of payment of said Fifty Thousand Dollars to be adjusted by Mr. W. H. Shippen and Mr. F. J. Dyer. As the above was the conclusion of this meeting, Mr. W. H. Shippen for himself and by proxy for F. E. Shippen fully concurred in the same.

W. H. SHIPPEN,
Pres. & Chairman.

689 Memorandum of Agreement made this first day of April, nineteen hundred and eight, between Shippen Brothers Lumber Company, a corporation organized under the laws of the State of Georgia, party of the first part, and Tennessee Copper Company, a corporation organized under the laws of the State of New Jersey, party of the second part;

Whereas, the party of the first part (hereinafter called the Lumber Company) represents that it is the owner in fee simple, free from all incumbrances, of certain lands and timber in the State of Georgia, and owns certain good and valid options, contracts and interests on other timber lands in said State, as scheduled and claimed in inventory and reports in books of said Lumber Company, and the said Lumber Company has asserted certain claims or demands against the party of the second part (hereinafter called the Copper Company) for damages alleged to have been done to said lands and timber by said Copper Company by reason of the maintenance and operation of its smelters and plant and the smoke, fumes and gasses therefrom; and

Whereas, both said parties are desirous to fully settle their differences and the Copper Company is desirous to continue its business as heretofore and as it may hereafter see fit so to do without let, hindrance or molestation of said Lumber Company or other party or parties, and to be released and relieved of any and all litigation and claims for past, present and future damages; and

Whereas, the parties hereto have duly authorized their officers executing this agreement so to do with full power to act in their behalf to accomplish and complete said objects upon the terms and conditions hereinafter set forth;

Now this Agreement Witnesseth: that for and in consideration of the premises and the mutual covenants and agreements
690 herein contained and the payment of one dollar in hand paid by the Copper Company to the Lumber Company, the receipt whereof is hereby acknowledged, said Lumber Company does hereby settle, compromise and release each, every and all of its claims and demands against said Copper Company, and the said Lumber Company covenants and agrees to and with the Copper Company to execute and deliver to the Copper Company at the time of closing as hereinafter stated, deeds, releases and instruments as hereinafter more fully described, and to accept the sum of Fifty Thousand ($50,000.00) dollars, payable as follows:

At the time of the closing as hereinafter fixed, twelve thousand, five hundred dollars	$12,500.00
At the expiration of one year from the date thereof twelve thousand, five hundred dollars	12,500.00
At the expiration of two years from the date thereof twelve thousand, five hundred dollars	12,500.00
At the expiration of three years from said time of closing the sum of twelve thousand, five hundred dollars	12,500.00
Making a total sum of fifty thousand dollars	$50,000.00

And it is further covenanted and agreed by said Lumber Company to and with said Copper Company that it will, at the time and place of closing hereinafter fixed duly execute and deliver unto said Copper Company a full and general release of each and from all claims and demands past and present which it has or may have had against said Copper Company, its successors or assigns, and to give and deliver to the Copper Company a full and general release duly executed unto the Copper Company for any and all damages that may arise from the operation of its smelter plants or from any smelter plants it may have or which it may hereafter have by reason of smoke, fumes and gases, passing over and upon the lands or timber now owned or controlled or in which said Lumber Company is now interested, and said Lumber Company will therein
691 covenant not to make any claim or demand in the future or bring any action or proceeding, either in law or equity, for any damages by reason of smoke, fumes and gasses passing over and upon the lands and interests now owned or claimed to be owned, controlled, leased or optioned by said Lumber Company by any operations of such Copper Company without limitation in respect to any increase in the amount or intensity of such smoke, fumes and gasses or from any present or future method of operation, and said Lumber Company shall covenant to hold the said Copper Company harmless of from and against all claims and demands which may be asserted by said Lumber Company, its successors or assigns, or any party or parties for damages to said lands, timber and interests by reason of smoke, fumes and gases passing over and upon the same.

But in case the Lumber Company sells any of its lands of interests the part of the covenant in reference to holding the Copper Company harmless shall not apply to the damages which might be claimed by successors in title by reason of any increased amount and intensity of smoke, fumes and gases over and above that allowed by the easement hereinafter referred to.

And it is further covenanted and agreed by said Lumber Company to and with said Copper Company that at the same time and place it will duly execute and deliver unto said Copper Company its deed, or deeds, or other instruments as may be required, and in such form and language as may be required by which it in terms grants, bargains and sells to said Copper Company, its successors and assigns, a right of easement and easements by which said Copper Company and its successors and assigns may maintain and operate smelters or plants as it may require and allow and permit the smoke, fumes and gases therefrom to pass over and upon said lands,
692 timber, options and interests as aforesaid, without let, hindrance or molestation of said Lumber Company, its successors or assigns, creating by said instrument a perpetual servitude, easement or estate, which shall run with the land in favor of said Copper Company, its successors and assigns, and against said Lumber Company, its successors and assigns, in respect to all the lands, timber, options, contracts and interests now owned or claimed to be owned, leased, or optioned, or in which said Lumber Company claims to have interests and good valid options, and such instruments shall contain as to the lands owned or claimed to be owned in fee the

usual covenants contained in warranty deeds used in Georgia, with a proviso, however, that the easement or easements so to be granted shall be limited to the maintenance by said Copper Company, its successors and assigns, or a smelting plant outside of the State of Georgia emitting substantially no more smoke, fumes and gases than its present smelting plants can or might emit when operated at their fullest capacity without regard to the operation of the Sulphuric Acid Plant, and in case it extends its plant into the State of Georgia or emits substantially more smoke, fumes and gases than such fullest capacity so stated, then in either of these events this easement shall not extend to the additional smoke, fumes and gases so liberated or emitted.

The Lumber Company covenants and agrees to notify the Copper Company before any sale, lease or other disposition of all or any of the lands or timber interests herein referred to and to give timely notice of any action or proceeding affecting title to same so as to give the Copper Company sufficient time to record any or either of said instruments.

And it is further covenanted and agreed that nothing herein contained shall be construed as an admission causing any damage or of any liability of said Copper Company to said Lumber Company in respect to doing or causing any damage to said lands or timber interests.

693 At the time of closing the Copper Company will execute to the Lumber Company an instrument duly signed by its authorized officer which in effect shall provide for the discharge and cancellation or satisfaction of record of the easements herein mentioned in the event and upon the condition that said Copper Company refused to make any of the payments to the Lumber Company, and said instrument shall be deposited in escrow with the Trust Company of America, in the City of New York with the understanding that said instrument be delivered over to the Lumber Company in the event that the Copper Company fails to make any of the payments herein mentioned but after and upon the final payment by the Copper Company to the Lumber Company, this instrument is to be given back to the Copper Company and cancelled.

And it is further agreed that the Lumber Company shall furnish to the Copper Company a certified extract of the minutes of their meeting as will prove the authority of the officer executing said instruments and said instruments shall contain full and sufficient descriptions of the lands and interests herein referred to. And it is further agreed that the closing and delivery of these papers shall be held at the office of Martin H. Vogel, Borough of Manhattan, City of New York, on the 17th day of April, 1908, at 10 o'clock in the forenoon.

In Witness Whereof the parties hereto by their officers and agents duly authorized have set their hands and seals the day and year first above written.

SHIPPEN BROS. LUMBER CO.,
WM. H. SHIPPEN, *Pres.*
TENNESSEE COPPER CO.,
By J. PARKE CHANNING, *Pres.*

694 STATE OF NEW YORK,
County of New York, ss:

On this first day of April, 1908, before me personally came William H. Shippen to me known who being by me duly sworn, did depose and say: that he resided in Ellijay, Georgia, that he is the President of the Shippen Brothers Lumber Company, the corporation described in and which executed the foregoing instrument; that he knew the corporate seal of said corporation, and that the seal affixed to said instrument is a copy of said seal, and that it was so affixed by order of the Board of Directors and by order of the stockholders of said corporation, and that he signed his name by like order.

JOHN P. O'BRIEN,
Notary Public Kings Co. Cert. Filed in N. Y. Co.

STATE OF NEW YORK,
County of New York, ss:

On this first day of April, 1908, before me personally came J. Parke Channing, to me known, who being by me duly sworn, deposes and says: that he resides in the Borough of Manhattan, City of New York; that he is the President of the Tennessee Copper Company, the corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation, and that the seal affixed to said instrument was a copy of said seal, and that he as President signed his name thereto with full authority.

JOHN P. O'BRIEN,
Notary Public Kings Co. Cert. Filed in N. Y. Co.

695 It is hereby agreed that the closing of the within contract is adjourned to April 28th, 1908 at ten o'clock forenoon at the Piedmont Hotel, Atlanta, Georgia.
New York City, April 17, 1908.

MARTIN H. VOGEL,
Representing Tennessee Copper Company.
MILLARD S. REED,
Representing Shippen Brothers Lumber Co.

It is hereby agreed pursuant to letters between the parties hereto that the closing of the within contract is adjourned to May 1st, 1908, at ten o'clock A. M. at the Piedmont Hotel, Atlanta, Ga.
This April 28th, 1908.

HOWARD CORMICK,
Representing Tennessee Copper Co.
SHIPPEN BROS. LUMBER CO.,
W. S. SHIPPEN, *Pres.*

Filed in Open Court, September 28, 1914.

O. C. FULLER, *Clerk,*
By J. D. STEWARD, *D. C.*

696 Agreement made this third day of April, 1908, between William H. Shippen and Frank E. Shippen, parties of the first part, and Oscar B. Van Sant, party of the second part, witnesseth:

Whereas, the parties of the first part represent that they are the owners of fifteen hundred and sixty (1560) shares of full paid and non assessable stock of the Shippen Brothers' Lumber Company, and that the said Corporation was organized under the laws of the State of Georgia, having a capital of One Million Dollars ($1,000,000) divided into ten thousand shares (10,000) of which forty-five hundred and sixty (4560) shares are issued and fully paid for and that said company has no bonded indebtedness, and that the statement submitted and signed contemporaneously herewith, shows the true condition of the Corporation on the 31st day of December, 1907.

Now therefore, in consideration of One Dollar ($1.00) to the other in hand paid, and in consideration of the premises, agreements and conditions hereinafter stated, it is agreed as follows:

1. Parties of the first part agree to sell and deliver to the party of the second part Seven Hundred and Eighty (780) shares of the stock of the Shippen Brothers Lumber Company, which is one-half of their holdings in the said Company, to the party of the second part at the price of One Hundred and Fifty Dollars ($150.00) per share, and the party of the second part hereby agrees to purchase said Seven Hundred and Eighty (780) shares upon the terms and subject to the premises, agreements and conditions herein, and to make payments for said shares on the following dates and in the following amounts:

On the third day of April, 1908, for 100 shares of the above stock	$15,000.00
On the first day of May, 1908, for 14 of these shares	2,100.00
On the first day of March, 1909, for 134 of these shares	20,100.00
697 On the first day of March, 1910, for 134 of these shares	20,100.00
On the first day of March, 1911, for 134 of these shares.	20,100.00
On the first day of March, 1912, for 134 of these shares.	20,100.00
On the first day of March, 1913, for 130 of these shares..	19,500.00
Making a sum total of for the 780 shares above named..	117,000.00

2. On default of any payment upon the date hereinbefore set forth for a period of sixty (60) days after the due tender of the shares of stock then to be delivered and upon tender of all stock above stated remaining undelivered, the amounts due and payable for said stock as hereinbefore provided shall, at the expiration of said sixty (60) days become payable and the parties of the first part shall thereupon become entitled to enforce the collection of the same.

3. At the time of each payment the number of shares above mentioned of the Shippen Brothers Lumber Company shall be signed in blank in proper form, and except the fourteen (14) shares, de-

livered to the Central Trust & Safe Deposit Company, of Cincinnati, Ohio, or any other good trust company of Cincinnati, to be held in escrow by said Trust Company until the final payment herein mentioned, and to be delivered to the party of the second part or his assigns upon the final payment or at such a sooner date as may be consented to by all parties hereto. The fourteen (14) shares shall be delivered to the party of the second part within thirty (30) days' written notice.

4. During the continuance of this contract the voting of these shares, excepting the said fourteen (14) when issued to the party of the second part, shall be and remain in the parties of the first part. Any dividend paid by the company shall, on all the shares of stock paid for, be collected by the parties of the first part and paid over to the party of the second part. Any and all dividends, benefits, profits and other distributions paid on or given or
698 accruing to shares of stock not paid for, above eight (8%) per cent on the present stock issued, per annum or equal to the amount of eight per cent (8%) per annum, on the present stock issued shall be for the benefit of and paid to the party of the second part and applied on any back payments yet unpaid on this contract.

5. In the event of the dissolution, voluntary or involuntary, of the Shippen Brothers Lumber Company, during the term of this contract, this contract shall terminate upon such event and there shall be no further liability on the part of the parties hereto, and no further payments required, and the stock paid for be released from escrow and delivered to the party of the second part.

6. The parties of the first part further agree that at the expiration of five years from March 1st, 1908, they will sell and deliver to the party of the second part, and the party of the second part agrees that he will purchase their remaining seven hundred and eighty (780) shares of the stock of the Shippen Brothers Lumber Company at One Hundred Fifty ($150.00) Dollars per share, payable one-half in cash on said first of March, 1913, on delivery to him of said stock, and the remaining one-half on March first, 1914, on the delivery of the balance, and it is agreed that the said conditions as to dividends and distributions paid or accruing on these shares from the date of this contract, as herein set forth in regard to the other shares, shall apply to these shares.

7. That neither William H. Shippen nor Frank E. Shippen shall purchase nor be interested either directly or indirectly in any shares of stock, security or obligations of any other lumber company, and they nor either of them shall be interested either directly or indirectly in any saw mill or partnership in the lumber business within a radius of two hundred (200) miles of the smelting plants of the Tennessee Copper Company. That William H. Ship-
699 pen shall use his best endeavors to remain President of said Company and a member of the Board of Directors for a period of at least three years.

8. The parties of the first part agree to give the party of the second part a full and true statement of the condition of the Com-

pany once a month as of the first of each and every previous month, and to keep the party of the second part fully and truly advised of all transactions of the affairs of the Shippen Brothers Lumber Company, to which a stockholder would be justly entitled.

9. The party of the second part shall have the right at any time during the continuance of this contract to tender payment for any or all of the shares not paid for and delivered and at such time and in such event the parties of the first part shall deliver to the party of the second part all shares free from escrow signed in blank, and properly endorsed on payment of the full purchase price for the fifteen hundred and sixty (1560) shares. The parties of the first part will not vote or favor the issuance of additional shares of stock by the Company unless the party of the second part consents thereto.

10. It is distinctly understood and agreed that the party of the second part buys this stock wholly on its merits and without representation of any sort by the parties of the first part, except as is stated in the typewritten statement submitted at the time of the execution of this contract and marked "Schedule A".

11. The parties of the first part agree that they will not act with any other parties or do anything against the interests of the Tennessee Copper Company, as they may be advised by said Tennessee Copper Company.

12. This contract is not assignable by the party of the second part and all rights given hereunder are likewise given to his assigns. The party of the second part is fully aware of the settlement of claims of smoke injury between the Shippen Brothers Lum-
700 ber Company and the Tennessee Copper Company previously entered into and ratifies and approves such settlement.

13. Parties of the first part hereby acknowledge payment of the first mentioned sum of Fifteen Thousand ($15,000.00) paid by Oscar B. Van Sant by certified check under date of April 3rd, 1908, on the Seaboard National Bank, of New York City, and signed by said Oscar B. Van Sant.

In witness whereof, the parties hereto have hereunto subscribed their names and set their seals this third day of April, 1908; the said William H. Shippen representing that he has authority to sign for Frank E. Shippen and agreeing to send such written authorization and ratification signed by Frank E. Shippen.

WILLIAM H. SHIPPEN,
FRANK E. SHIPPEN,
By W. H. SHIPPEN, *Att'y.*
OSCAR B. VAN SANT.

In Presence of:

ALICE A. TRILL.
Each page ini-aled "OBVS."
MARTIN H. VOGEL.

701 STATE OF PENNSYLVANIA,
County of Allegheny, ss:

Before me, the subscriber, a Notary Public in and for said County and State, personally appeared William H. Shippen who acknowledged the foregoing instrument to be his free act and deed, and also asknowledged the signature of Frank E. Shippen by himself as Attorney in Fact for said Frank E. Shippen.

Witness my hand and notarial seal this 8th day of April, 1908.

ALICE A. TRILL,
[SEAL.] *Notary Public.*

My commission expires Jan. 16, 1909.

The Tennessee Copper Company guarantees the full performance of the above contract on the part of the party of the second part.

TENNESSEE COPPER COMPANY,
[SEAL.] By J. PARKE CHANNING, *President.*

I hereby guarantee the Tennessee Copper Company has the legal power to guarantee the above contract, and that the same is a legal and binding guarantee as to the Tennessee Copper Company.

FREDERICK LEWISOHN.

Payments to be made at Carnegie Trust Co., N. Y. City.

702 In the United States District Court for the Northern District of Georgia, Northern Division.

In Equity.

CHAS. S. RUSSELL et al., Complainants,
vs.
SHIPPEN BROS. LUMBER CO. et al., Defendants.

GEORGIA,
Fulton County:

Personally appeared W. H. Shippen who on oath says that soon after locating in Gilmer County and establishing the Shippen Bros. Lumber Company, the two copper smelting furnaces known as the Tennessee Copper Company and the Ducktown Company, located in the State of Tennessee, began to emit fumes which came over into the State of Georgia and began to actively destroy the standing timber. As the timber was killed, these fumes gradually extended until they began to affect the timber interests of the Shippen Bros. Lumber Company. Deponent with his brother then began an active campaign for the mitigation of this nuisance and the protection of the timber interests of the defendant company.

It is impossible for this deponent now to state in any itemized way the incessant labor and toil that was necessary to get this move-

ment to protect the Georgia timber into shape. For years deponent with his brother labored, with the other owners of timber in North Georgia, with legislators, with the legislature itself, with committees from the legislature, and different officials of the State, and in the scientific study of the character of the fumes, the extent to which they would go and the injury inflicted. After almost
703 numberless appeals to the public authorities, to the newspapers, to scientific magazines, and using every influence in the world that could be brought to bear upon the situation, deponent with his brother, finally got the movement into a compact, well organized condition where it presented a formidable front to the further infliction of the damage. The State of Georgia was finally induced, almost entirely by the labors of deponent and his brother, to file a Bill in the United States Supreme Court. In the preparation of the trial, deponent procured and caused to be procured thousands of affidavits which when printed filled several volumes of printed matter as a part of the record of the litigation. He visited and traveled all over several counties of North Georgia obtaining these affidavits with reference to the existence of the smoke. This litigation resulted in the adjudication by the Supreme Court of the United States that a nuisance existed which should be stopped. The litigation of course very seriously affected the two copper companies mentioned. They resisted it bitterly over a period of many years and never ceased this resistance even after the decree of the Supreme Court of the United States.

In 1908 and after this litigation had been decided and it became apparent to these copper companies that the end of the litigation was practically at hand, they took up negotiations with the Shippen Bros. Lumber Company for an adjustment of the damage which had been inflicted on its property. This was adjusted by the payment by the Tennessee Copper Company to Shippen Bros. Lumber Company of the sum of $50,000.00.

After said settlement had been effected, with the unanimous consent of all the stockholders, and the contract for the payment of the money had been closed, the Tennessee Copper Company took up with deponent and his brother the proposition of purchasing the stock which they had in the Shippen Bros. Lumber Company, and after negotiations deponent and his brother agreed to sell the stock.
Further details of this transaction are set out in another affi-
704 davit of deponent. On April 3rd, 1908, a contract was entered into for the purchasing of this stock, which then represented 1560 shares, the contract being nominally entered into with one Oscar Van Sant, who was an employee of the Tennessee Copper Company, located in their offices at 11 Broadway, New York. It was understood at the time that Mr. Van Sant was not the real purchaser, and in order to put the true vendee back of the contract, it was agreed upon between deponent and his brother on the one side and the Tennessee Copper Company on the other that the latter should guarantee the full performance of the contract of Mr. Van Sant, this guarantee being in writing and attached to the contract. It was executed by the then president, Mr. J. *T.* Channing. The

then moneyed interests which controlled the company was represented by the Lewissohn family, very wealthy people, and Mr. Frederick Lewissohn, who was the vice president of the company and the representative of the money interest back of the company, in turn guaranteed that the Tennessee Copper Company had the legal power to make the guaranty. In the negotiations and in the closing of this contract, the papers were prepared and the discussions had with the officers of the Tennessee Copper Company and the attorney for said company. Deponent, who was in active charge of these negotiations in behalf of himself and his brother, had substantially and practically no dealings whatever with Mr. Van Sant. Mr. Vogel, the attorney for the copper company, Mr. Channing and Mr. Lewissohn, officers of the copper company, were the people with whom deponent dealt and the dealings were had in the offices of said company and with said officers at a social club of which they were members. In none of these negotiations, either at the office of the copper company or at the social club, was Mr. Van Sant ever present. Deponent did not know him, had no interview with him, and no dealings with him until he was brought into the room at the office of the copper company and handed deponent his check for
705 the first payment.

The first eight installments for the purchase of the stock were paid at or about the time they matured. The last installment of $78,000. was paid by a check of the Tennessee Copper Company on or about March 7th, 1913, this check being drawn by the company itself upon its bank account and being given to deponent in the office of the company in New York City. This payment was made after deponent had had a conference with the board of directors and the officials of said company. About this time there was a change in the financial interests back of the Tennessee Copper Company and practically the entire management—president and all—of the old company was supplemented by new officers. About March 6, 1913, the contract of deponent and his brother was assigend to a Mr. Henry I. Gaskill, who was an employee of the copper company under the new administration. On March 6th, 1913 deponent gave a receipt for the last payment made, a copy of which will be exhibited to the court, to said Henry I. Gaskill but the check which made the payment is the check above referred to, drawn by the copper company upon its account and delivered in its office to deponent. On the same day Walter M. Briggs, treasurer of the copper company, received 520 shares of the capital stock which deponent and his brother had agreed to sell under the contract of April 3rd, 1908. The stock was delivered, not to Henry I. Gaskill, but direct to Mr. Briggs as treasurer of the Tennessee Copper Company. The payment of this $78,000. and the delivery of the stock immediately above mentioned was the consummation of the payment which was due five days prior thereto, to wit on March 1st, 1913, under the contract of April 3rd, 1908. Deponent went to the office of the copper Company in New York City for the purpose of receiving this payment a day or two prior to March 1st, 1914. Deponent when he first went to New York in reference to

this collection, called on Mr. Frederick Lewissohn, who had guaranteed that the Tennessee Copper Company had the legal
706 right to guarantee the contract, and who was at the time the contract was entered into, vice president of the company. Mr. Lewissohn informed deponent that he and his associates had been ousted from the Tennessee Copper Company and that the new interests in the company were represented by Mr. James Phillips Jr. as president and Mr. Walter Briggs as treasurer, with offices at 2 Rector Street. Deponent then went to Mr. Phillips, who referred him to Mr. Briggs. Deponent then went to Mr. Briggs who told him that the company meant to treat him right about the matter but did not quite understand the contract, and asked for a few days' delay until they could look into it. On the 5th day of March, 1913, there was a meeting of the directors, either formal or informal, of the Tennessee Copper Company, and at this meeting there were some four or five of the directors and officers present. Deponent went before their meeting and had a conversation, explaining the contract, which lasted a half hour or so with these different officers. In this meeting there were present both Mr. Phillips, president, and Mr. Briggs, secretary, and Mr. Utley Wedge, who is now the vice president. At this meeting the stock was dealt with as the stock of the Tennessee Copper Company. Neither Mr. Van Sant nor Mr. Gaskill was present, to deponent's knowledge. Deponent did not know Mr. Gaskill at that time, had never been introduced to him, and does not recall having seen him at the meeting. After this conference, Mr. Phillips, the president of the copper company, stated to deponent that the copper company meant to treat him right, would live up to the contract and make the payment. On the following day deponent surrendered to the company the stock in question and received the check in question and took the receipt heretofore mentioned from the secretary.

Subsequent to this time, and during the year 1913, de-
707 ponent was in the City of New York several times. He called several times at the office of the copper company, and there had different interviews with Mr. Briggs and Mr. Wedge. At these different interviews, these gentlemen stated, in substance, to deponent that they (meaning the stockholders of the Shippen Bros. Lumber Company) must get together and dispose of the timber owned by the company. There never has been at any time any stock issued to the Tennessee Copper Company or any of its officers, or owned or controlled by them, to deponent's knowledge, except the stock which deponent and his brother agreed to sell to Van Sant, and which now appears in the name of the Southern Timber & Power Company of Delaware.

When it became time to have the regular annual meeting of the stockholders of the defendant company in January, 1914, Mr. Wedge, the officer of the copper company representing this socalled Southern Timber & Power Company stock, attended the meeting representing this stock which at that time stood in the name of the second assignee, Mr. Gaskill. Mr. Wedge acknowledged deponent's right to vote the stock. Mr. Wedge indicated to deponent

and his brother that the last payment upon the stock would be met by the copper company, and for that reason he would prefer that no directors or officers be elected at the stockholders meeting, and that it be referred to a later date. Deponent and his brother readily agreed to this and the meeting was in fact deferred until the 26th of February in Philadelphia. Deponent had also in the meantime seen Mr. Wedge several times in New York, and there was then pending what appeared to be a substantial hope of disposing of the property to several different customers. The fact that this possible sale might be consummated was also one of the reasons why deponent and his brother agreed that the meeting might be adjourned.

708 Deponent and his brother attended the adjourned meeting held on February 26th, 1914, in Philadelphia. The last payment for the stock had not been made, and it was not then due, and a day or two before the meeting, Mr. Wedge, at the copper company's office, in New York, requested a further postponement of the election of directors and offices. Deponent again agreed to this proposition, as he had not received the last installment due. At the time of this last request and postponement of the stockholders meeting, the stock set out in the supplemental bill in the above stated case had been transferred from Gaskill to the Southern Timber & Power Company, this transfer having been effected on or about February 9th, 1914. Mr. Gaskill was present at the February meeting, representing this stock. On or about February 25th, 1914, deponent had the interview above referred to with Mr. Wedge at the office of the Tennessee Copper Company in New York City. Deponent and Mr. Wedge, representing the stock now standing in the name of the Timber & Power Company, agreed upon the details of what should occur at the stockholders meeting. There were then several propositions with reference to the sale of the timber pending, and these were discussed. Mr. Wedge at no time represented, either personally or as the agent of any other individual, any stock in the Shippen Bros. Lumber Company except the stock standing in the name of the Timber & Power Company. At the meeting in February, and carrying out the details on what should be done at the meeting agreed upon between Mr. Wedge and deponent on or about February 24th, Mr. Wedge was placed upon a committee for the purpose of making certain examinations and reports. He was at the meeting placed upon this committee and did make the examination and report sometime in May,

709 1914. He did this as the representative alone of the Tennessee Copper Company in its ownership of the Timber & Power Company stock. The payment due March 1st, 1914, was not met and deponent has actively pressed the payment of the sum due. He has a number of times interviewed in New York Mr. Wedge with reference to the matter. Deponent went to Mr. Wedge because of a statement made by Mr. Briggs the treasurer, that the directors had met and delegated the entire matter of dealing with deponent and his brother to Mr. Wedge. Mr. Wedge never in any of these interviews denied that his company was the real

owner of the stock or that he did not know about the contract standing originally in the name of Mr. Van Sant, but placed his failure to pay the sum due ultimately — that there was some question about the title to some of the timber deeds held by the company. Deponent and his brother did not sell land to Mr. Van Sant as the representative of the copper company, but sold stock in the corporation. In April, 1914, Mr. Walter M. Briggs, the treasurer of the Tennessee Copper Company, visited Ellijay for the purpose of going over the property of the Shippen Bros. Lumber Company. Mr. Briggs was not the owner of any other stock individually, nor was he the representative of any other stock except that of the Tennessee Copper Company standing in the name of the Southern Timber & Power Company. Mr. Briggs was there several hours, went over the mills of the company and the mill yards, and in the conversation which ensued repeatedly spoke of the ability of the company to sell the timber interests, speaking of it as "our interests." Mr. Briggs had no other business than to inspect the plant of the defendant company, and came there as the treasurer and representative of the Tennessee Copper Company. He discussed in detail with deponent and his brother the opportunities for a sale of the entire timber interests.

710 Deponent exhibits to the court in connection with this affidavit a series of letters written to Mr. Wedge and his replies. The letters to Mr. Wedge are true and correct copies and the replies are the original letters of Mr. Wedge, and the court will observe from this correspondence that up to the present time the stock standing in the name of the Southern Power & Timber Company has been handled, and is now being handled, by the Tennessee Copper Company.

At the last meeting of the stockholders held September 16th, 1914, Mr. Wise, who appeared as the representative of the Timber & Power Company, brought with him a letter of introduction from Mr. Wedge of the copper company.

WILL H. SHIPPEN.

Subscribed and sworn to before me, this the 24th day of September, 1914.

A. H. BANCKER,
Notary Public, Fulton County, Ga.

711 Copy.

NEW YORK, N. Y., Mar. 6, 1913.

The undersigned, William H. Shippen and Frank E. Shippen, hereby acknowledge receipt to Henry I. Gaskill of the sum of Seventy-eight thousand ($78,000.00) dollars, being payments due March 1st, 1913, under contract between the undersigned, parties of the first part, and Oscar B. Van Sant, party of the second part, dated April 3rd, 1908, which contract has been assigned by said Van Sant to said Gaskill, and the undersigned further acknowledges

that all previous payments due under said contract have been made by said Van Sant in full to date.

Signed WILLIAM H. SHIPPEN
" FRANK E. SHIPPEN.

712 NEW YORK, N. Y., March 6, 1913.

Received from William H. Shippen and Frank E. Shippen five hundred twenty (520) shares of the capital stock of the Shippen Brothers Lumber Company, a Georgia corporation, as follows:

Certificate	No.	26, ... 50	shares
"	"	46, ...165	"
"	"	47, ...165	"
"	"	125, ... 40	"
"	"	126, ...100	"
Total		520	Shares,

all standing in the name of Frank E. Shippen and by him indorsed in blank.

WALTER M. BRIGGS,
Treasurer.

U. S. District Court, Filed in Clerk's Office Sep. 30, 1914.
O. C. FULLER, *Clerk.*

713 In the United States District Court for the Northern District of Georgia, Northern Division.

In Equity.

CHAS. S. RUSSELL et al., Complainants,
vs.
SHIPPEN BROS. LUMBER COMPANY et al., Defendants.

GEORGIA,
Fulton County:

Personally appeared W. H. and F. E. Shippen, who on oath say that they had been for a number of years engaged in the lumber business in Georgia and elsewhere at the time of the incorporation of the defendant company.

* * * * * * *

In reference to the charge that between 1903 and 1908 deponent W. H. Shippen devoted a large amount of his time in protecting the interests of the corporation against the fumes of the Tennessee Copper Company and the Ducktown Copper Company's furnaces, deponents say that this is true. Both of deponents gave a large amount of their time and brought to that situation every energy which they possessed, to protect the damage that was being inflicted. Deponents worked at it ceaselessly up to the time of the settlement made by the

company with the Tennessee Copper Company, and which was made over the protest and objection of deponent, W. H. Shippen. It is also correct that the damage inflicted upon the defendant's property was very great—several times more than the sum which the other stockholders, including the deponent Patton, voluntarily, knowingly and deliberately agreed to accept, and did accept over the protest of deponent, W. H. Shippen. It is also true that some monies were used by deponents in defraying these expenses, but this
714 was done with the knowledge and consent of all the stockholders, officers and directors of the company, was duly entered on the books, and never from that day to this has any protest been made. Deponents do not understand that H. J. Patton in said affidavit is now making any protest against said expenditures. During the years mentioned, each and every stockholder connected with the corporation was actively, constantly and repeatedly advised of the extent of the damages, its continuing character, the evil that threatened for the future, and the various efforts and labors of these deponents to put a stop to the infliction of these damages.

The statement contained in said affidavit on page eleven, that deponent W. H. Shippen stated to H. J. Patton that the damages caused by the Tennessee Copper Company was $400,000.00 is not correct. Deponents have kept in active actual touch with the damages that have been inflicted by the two companies; they were familiar with the value of the timber; they knew also the extent of the damage better probably than anyone else except the woodsmen of the company. Deponent W. H. Shippen estimated the damages inflicted by the Tennessee Copper Company at about $200,000.00 up to April 1908. Deponent probably stated that he wanted suits instituted to recover this damage; it certainly was very actively and importantly in his mind that the defendant company was entitled to maintain a suit of this sort and that $200,000.00 should be paid for the damage actually inflicted up to that period of time. What the future damage might be after 1908 neither of deponents could estimate. So long as the trees are alive they protect to a certain extent trees more remotely situated from the fumes. But as the barrier of trees is killed, the fumes float further into the forest, and year by year the region of damage is gradually extended. It has reached in the present instance some fifty miles from Ducktown.

715 The two copper companies were located in Polk County, Tennessee; they were strongly entrenched at that point; they dominated the county; they were careful to keep all properties and monies which could be attached out of the state of Georgia, and litigation with them in that county was an exceedingly perilous venture. The other stockholders of the company were somewhat averse to instituting this litigation unless it was absolutely the last resort. It was for this reason that they, and particularly deponent H.J.Patton, took up in New York or Philadelphia with the local agent of the copper company the matter of a settlement without at that time deponent's knowledge or consent. Mr. Martin Vogle prior to the meeting of March 27, 1908, stated to deponent W. H. Shippen that H. J. Patton, the gentleman who made the affidavit, had suggested

to him (Vogel) a figure of $30,000.00 in settlement of the Shippen Bros. Lumber Company claim for damages. Deponent W. H. Shippen when this statement was made was very greatly infuriated at it. At the stockholders' meeting on March 27th, and at which H. J. Patton was represented by proxy, deponent W. H. Shippen stated what Mr. Vogle had related to him and almost immediately thereafter Mr. Vogle himelf appeared at that stockholders' meeting. As is related in another affidavit, deponent W. H. Shippen strenuously urged the stockholders under no conditions to settle the then existing claims for damages at less than $100,000.00, and that this settlement should be for the then existing damages, leaving open for the future such damages as might be thereafter inflicted. The proposition of Patton, without the concurrence or knowledge on the part of deponent W. H. Shippen, had, however, already been carried to the Tennessee Copper Company. Deponent W. H. Shippen was so embittered by the interference with his plans and the preposterous suggestion of accepting $30,000.00, that he retired from the meeting when Vogle came into it. When Mr. Vogle left the
716 & 717 stockholders' meeting and deponent returned to it, he found that the stockholders had authorized a proposition to be made to the Tennessee Copper Company to settle all of the existing damage that had been inflicted, and to give them a perpetual easement to flood the lands for the future, all for the sum of $25,000.00.

Deponent W. H. Shippen was desperate at that situation thus presented. He and his brother at that time owned and controlled only about 34% of the capital stock, the total number of shares held by them at that time being 1560 shares. He and his brother combined could not prevent the settlement from going through. If deponents had at that time owned a majority of the stock, no negotiations with Mr. Vogel upon the basis indicated would ever have been tolerated nor would any such settlement have been authorized by the stockholders.

Deponent W. H. Shippen then proceeded very emphatically to raise the biggest character of a row he knew how to with the other stockholders, and as a result of this he finally got the proposition they then had authorized from $25,000.00 to $50,000.00. This was the best he could do with it. He — forced, because he was in a minority, to accept it and the resolution which is shown as of that date on pages 41 and 42 of the minutes was enacted and deponent was instructed to carry out that resolution by the execution of the easement and settlement mentioned. He did this over his protest, exceedingly regretfully, and determined that he would dispose of his and his brother's stock in the company if it was possible to get anything like a fair sum for it. As a result of this he immediately entered into negotiations with the Tennessee Copper Company under which he obtained a fair price of $150.00 per share for their stock, as is evidenced by the contract dated April 3, 1908.

Subsequent to this transaction, the stock of Fred J. Dyer and James Mitchell was offered to deponents at a sum very much less than

its value. Both Mr. Dyer and Mr. Mitchell had been stock-
718 holders of the company ever since it was organized, and understood as much about the company and its condition as did either of deponents. No representation whatever was made by deponents or either of them, to Mr. Dyer or Mr. Mitchell. For reasons satisfactory to these gentlemen, they desired to sell, and their stock was offered to deponents at a price which was less than the value of the stock notwithstanding any possible injury that might be inflicted upon the company's property by the Ducktown fumes, and they purchased it. Neither of these gentlemen has ever asserted or suggested that any misrepresentation whatever was made in connection with said stock by either of deponents.

* * * * * * *

The statement that on March 6, 1913, there was deposited to the account of Shippen Bros. $78,000.00 received from the copper company for the sale of deponent's stock, may be true in part. The statement in the affidavit that deponent W. H. Shippen stated to H. J. Patton that this sum had been derived from the sale of real estate is untrue. The fund in question belonged to the deponents and it was none of H. J. Patton's business where it came from. He had no right to any information with reference to the subject, asked for none, and got none.

The statement contained on pages 14 and 15 of the affidavit, that there was a pretended settlement with the copper company at a totally inadequate sum for the enormous damage which had been done Shippen Bros. Company's property, is true except that the settlement was not pretended. It was the result of long negotiation, part of which H. J. Patton had participated in very greatly to the detriment of the interests of the stockholders, and but for which said interference deponent W. H. Shippen would have been able to have ultimately received for his company a very much
719 larger sum. As has been stated, this deponent W. H. Shippen did not concur in the settlement, protested violently against the same and was forced into it only because he and his brother at that time held only a minority of the stock and were utterly unable to help themselves. Deponent W. H. Shippen was then the president of the company and executed the contract in question simply because he had been directed to do so by the majority vote of the stockholders and was helpless to do otherwise.

With reference to the charge on page 15, that in April, 1908, the book value of the stock of Shippen Bros. Lumber Company was $90.00 per share, these deponents do not know what appeared at that time to be the book value. As a matter of fact, the timber interests and lands were carried on the books at what they originally cost and not at what they were worth. Lands which had been held by the company and by the partnership prior to the organization of the corporation, and which were purchased at a perfectly nominal sum, and which had trebled and quadrupled in value, were still carried in 1908 on the books at their original cost. Nobody pretended to believe that the actual value of these timber interests were

not greatly in excess of the original cost price. To illustrate this, the 30,000 acres of land obtained from the North Georgia Lumber Company is now carried on the books of the company at what it cost, to wit $4. an acre. It is now reasonably and fairly worth not less than $15. an acre.

With reference to the statement in the affidavit at the foot of page 15 and top of page 16, that if all the stockholders of the company had been settled with at the same basis which was paid to deponents for their stock by the copper company, the corporation would have received about $278,000.00 may be a correct calculation. It is further more true that if at the March meeting, 1908, these
720 deponents had not been overridden by a majority of the stock, the corporation would have received in a settlement for the then inflicted injury not less than $100,000.00 or there would have been no settlement effected, nor would there have been in existence a perpetual easement authorizing the future flooding of the defendant's property. Deponents beg the court to carry in mind the fact that the man who made this affidavit was one of those majority stockholders that overrode deponent W. H. Shippen at that meeting and insisted upon a settlement being effected at $50,000.00.

Deponents have fully related the circumstances, motives, reasons, etc., which induced them to make the sale to the copper company. They had devoted years of incessant labor to the protection of the company from these fumes, and to the ascertainment of the damages which had been inflicted, and at a stockholders' meeting this labor was wantonly thrown away in a rediculous settlement made by the other stockholders. Deponents at that time and as a result of that meeting had just one burning desire, which was to get rid of all their stock in that company at the first possible moment, and clear their skirts of stockholders who were willing to — such a heedless, unnecessary and sacrificing settlement. Deponents estimated the standing timber, as such, worth not less than $1,000,000.00, and as an operating proposition several times more; they did not believe at that time that the property either as an operating proposition or as mere timber holdings to be worth fifty cents on the dollar with the perpetual right to flood it with copper fumes outstanding in favor of the copper companies.

It is correct that Mr. Whitmer opened negotiations about 1909 to purchase the capital stock of the defendant company at $125. per share. It is untrue that deponents or either of them broke up this sale. Mr. Whitmer was either unable to raise the money or subsequently changed his mind. Deponents are somewhat at a loss to understand the object of the financial statement contained on page 17. It is correct that deponents received for their
721 partnership property the sum of $25,000.00 in cash, and they subsequently received from the North Georgia Lumber Company $12,000.00 in cash, and from the copper company for the sale of their stock $175,000.00. There was none of these sums paid to deponents for any of the property of the defendant company. Said sums were paid to deponents entirely for their individual prop-

erty and with which neither Patton, the corporation nor any other stockholder had anything to do.

* * * * * * *

WILL H. SHIPPEN.
F. E. SHIPPEN.

Subscribed and sworn to before me, this the 29th day of September, 1914;

ZOE DAVIS,
Notary Public, Fulton County, Georgia.

U. S. District Court. Filed in Clerk's Office Sep. 30, 1914. O. C. Fuller, Clerk.

722 UNITED STATES OF AMERICA,
Northern District of Georgia ss:

I, O. C. Fuller, Clerk of the United States District Court, in and for the Northern District of Georgia, do hereby certify that the foregoing and attached printing and writing is a true, full, correct and complete copy of the original letter of W. H. Shippen to Mr. Patton, dated May 16, 1907; minutes of stockholders' meeting held at Manhattan Hotel, New York City, March 27, 1908, pages 41 and 42 of minute book; memorandum of agreement between Shippen Bros. Lumber Company and Tennessee Copper Company dated April 1, 1908; agreement between W. H. Shippen, F. E. Shippen and Van Sant, Exhibit D to the affidavit of Henry Adsit Bull; affidavit W. H. Shippen dated September 24, 1913; affidavit Will H. and F. E. Shippen, style of case and to first period on page 1; then beginning at last paragraph bottom of page 6 to second paragraph on page 10; then beginning second paragraph on page 12 to first paragraph on page 15, also page 18, on file in my office in the matter of Chas. S. Russell and others against Shippen Bros. Lumber Company.

In Testimony Whereof, I hereunto set my hand and seal of the said District Court, at Atlanta, Georgia, this the 4th day of November, A. D. 1914.

[SEAL.]

O. C. FULLER,
Clerk United States District Court,
Northern District of Georgia.

(Endorsed:) Supreme Court U. S. October Term, 1914. Term No. 1, Original. The State of Georgia vs. The Tennessee Copper Company et al. Continuation of the deposition of W. H. Shippen on behalf of the Complainant. Filed November 18, 1914.

723 **No. 1.**

THE STATE OF GEORGIA, Pl't'f,
vs.
THE TENNESSEE COPPER COMPANY and THE DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, L't'd, D'f'ts.

Original. In Equity.

The Depositions of W. F. Naughan and Others, Taken on Behalf of the Defendants, The Ducktown Sulphur, Copper and Iron Company, L't'd, Commencing Thursday, June 18th, 1914, in the City of Chattanooga, Tennessee, Pursuant to a Notice Hereto Attached, in the Presence of J. A. Drake and Lamar Hill, Representing the State of Georgia, and J. A. Fowler, George G. Hyatt, and W. B. Miller, Esqs., Representing the Defendants.

724 The said witness W. F. NAUGHAN, being first duly sworn, upon examination testified as follows:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. Mr. Maughan, how old are you?
A. I am fifty years old.
Q. 2. Where do you live, with respect to the plant of the defendant Ducktown Sulphur, Copper and Iron Company, L't'd, which in this record for short we will call the Ducktown Copper Company?
A. About one and a half miles north of the Copper Company's plant.
Q. 3. Is that company located at the same place it has been since the company began operations?
A. Yes, sir.
Q. 4. When did that company commence operations, which have been continued down to the present time?
A. My recollection is that it began in 1891 or '2.
Q. 5. The operations have been continued without interruption continuously to the present date?
A. Yes, sir.
Q. 6. Before that company began to smelt ore, had their previously been operations of similar nature carried on in the Ducktown Basin?
A. Yes, sir.
Q. 7. By what company?
A. The Union Consolidated Mining Company.
Q. 8. Who was the manager of that company?
A. J. E. Raught.
Q. 9. Those operations extended over a series of years?
A. Yes, sir.

Mr. DRAKE: We will ask for the rule.

725 The witnesses were then requested to leave the room, and did so.

Mr. MILLER: Mr. Drake, under our practice, we are entitled to have present some one to remain as the representative of the Copper Company, and we have usually retained Mr. Reese, who merely knows the witness, and also knows the facts that they know, but we are going to call him as a witness. Will there be any objection to his remaining?

Mr. DRAKE: I think that is the rule, but is it not also the rule to put him on first?

Mr. MILLER: It is not so with us. I do not know *where* it is anywhere else. I want to meet every wish of yours so far as I can.

Mr. DRAKE: Well, that is all right.

Mr. MILLER: I understand it is agreeable.

Q. 10. During the operations of the company which was managed by Mr. Raught, what was the system of smelting, that is, smelting the ores, and eliminating the sulphur content?

A. Well, they roasted the ores before they were smelted in an open heap, roast piles.

Q. 11. How were those heaps constructed, in a general way, tell how that was done?

A. Well, they used wood underneath the ore, about probably eighteen or two foot thick. They would put about eighteen inches to two foot thick under the roast pile, put the ore on top, then they would fire the wood, and that would fire the sulphur, and it would burn out.

Q. 12. What was the size of those heaps?

A. Well, they were different sizes. I could not give just the dimensions. I have seen them hundreds of times, and I guess they usually had them from twenty-five to thirty feet wide, and forty to fifty feet long, and about, they usually use about four foot of ore, four foot thick on top of the wood.

726 Mr. DRAKE: Let me interrupt you just a moment. We might settle that now. Does not the order relate only to the change of conditions, is not that all, and is not all this set out fully in the old case, about the old method. I think it is pretty fully, I do not know just what it is.

Mr. MILLER: I do not know just what it does relate to, but I wanted to show by this witness what the old condition was, and he is the only witness I will introduce on that point. The trouble is that was all introduced so far back, without any cross-examination or anything.

Mr. DRAKE: I do not care but it merely incumbers the record, and the court wants, as I understand the order, to know the changed conditions since 1907, at the time the decree was entered. I do not want to appear as excepting, unless there is something material comes up.

Mr. MILLER: This is the one principal witness by whom we expect to show the early conditions there, coming down to 1907, and then

show the changes to the present. And I particularly want to go into it by one witness.

Mr. DRAKE: Please note my exception to the questions on the ground that they are irrelevant and incompetent for the reason that the facts are fully settled and proved in the original case, now in the supreme court of the United States, and it does not relate to the changed conditions since the decree was entered in the case; and it does not reflect on the issues in the present case.

Q. 13. Probably how many of those heaps were on the yard, known as the roast yard?

A. I could not give you just a definite number, because I was just a boy then, quite a good many, but I do not know just the number.

Q. 14. Several hundred.

A. No, sir, they did not roast as extensively as they do
727 now. There might have been fifty or seventy-five, something like that.

Q. 15. After those heaps were lighted, how long were they in process of burning, or smelting, or roasting?

A. From sixty to ninety days.

Q. 16. During that time, did or not the smoke or vapors ascend and drift into the atmosphere, from the roasting heaps?

A. Yes, sir.

Q. 17. After the ore was thus treated, what was next done with it?

A. Smelted through the furnaces.

Q. 18. Taken to the smelters?

A. Yes, sir, and smelted.

Q. 19. And what was sent to the smelters, as I understand it was converted into slag?

A. Part of it went to slag, and part went to mat proper.

Q. 20. Where was the slag conducted?

A. The slag is the waste, the mat is the product they were after.

Q. 21. The slag was run off, and was dumped into the slag pile?

A. Yes, sir.

Q. 22. And what was done with the mat?

A. Under Wraught's administration, it was reduced to about ninety-eight per cent copper and shipped.

Q. 23. About when did the operations of which Captain Wraught was the head, by the Union Consolidated Company cease?

A. I have forgotten just the year; it was probably in 1878 or '80, something like that; I do not remember just exactly when it was. I could not give the date.

Q. 24. When did the Ducktown Company begin operations, and did it operate open heap roasting for a number of years.

A. Yes, sir.

728 Q. 25. When did it cease to do open heap roasting?

A. Well, I believe it was in 190-, —I forget what year it was. They began probably in 1907, I am not sure about that, I get those dates mixed up.

Q. 26. You do not remember the year they ceased open heap roasting?

A. Really, I do not remember just the year. I have some notes of it, but I do not remember the year it was.

Q. 27. About when did the Tennessee Copper Company begin to operate a smelting plant, and treating ores in that same section?

A. About 1900 or 1901.

Q. 28. Has it been continuously so engaged since that time?

A. Yes, sir.

Q. 29. How far is the plant of the Tennessee Copper Company's from the line of the state of Georgia.

A. Well, I do not suppose it is more than a quarter of a mile.

Q. 30. It is just inside of Tennessee, then?

A. Yes, sir, just inside of Tennessee.

Q. 31. I believe the town or village that has sprung up around there is called Copperhill?

A. Yes, sir.

Q. 32. Where is the plant of the Tennessee Copper Company located with respect to the Ducktown Copper Company's plant?

A. At about two or two and a half miles southwest.

Q. 33. Making the plant of the Ducktown Company how far north of the Georgia line?

A. Well, from two and a half miles, I suppose from that to three, I do not know just the distance.

Q. 34. When did the Tennessee Copper Company begin to operate; did it at the beginning practice open heap roasting?

A. Yes, sir.

729 Q. 35. Which ceased to roast the ores in the open heap first, which of the two companies?

A. The Ducktown Company.

Q. 36. At the time the Ducktown ceased to have open heap roasting, did it have a stack of roasted ore on hand?

A. Yes, sir, my understanding. I never saw the stock of ore.

Q. 37. Did you live there at that time?

A. Yes, sir, I lived there and that was my understanding.

Q 38. Over what period of time did the Tennessee Company practice open heap roasting, after the Ducktown Company ceased?

A. Well, I do not know just exactly, but some year, or two, or three.

Mr. DRAKE: Note an exception to all this evidence given, please sir, on the grounds formerly stated, and for the reason that it does not relate to the changed conditions since the decree in the cause, in 1907.

Q. 39. Was all the sulphur eliminated from the ores when they were roasted in the open heaps?

A. No, sir, they were not.

Q. 40. When those ores were gathered from the heap and taken to the smelter and run through there, were they or not, heated to the point where they would melt?

A. Yes, sir.

Q. 41. And in that melting process which is called smelting, w[illegible] there or not sulphur content eliminated into the atmosphere?

A. Yes, sir.

Q. 42. Where was that sulphur content eliminated, at what point did it go out of the stack, or where?

A. Yes, sir, it went out of the stack of the furnace.

Q. 43. Was it all sent out, or part of it pass off in the mat?

730 A. I suppose that there was some little percent left in the mat. I do not know just how much.

Mr. DRAKE: Except to the question and answer, because the question is leading, and the answer is irrelevant and indefinite and hearsay.

Q. 44. Did you live at Ducktown continuously, I mean in the Ducktown region, from the time the Ducktown Company began operations, until the present time?

A. Yes, sir.

Q. 45. Now, about what size is that territory in Polk County, known as the Ducktown basin, or just simply referred to as the "Basin"?

A. Well, it covers an area I suppose, of eight or ten miles.

Q. 46. How many miles across each way, the longest way, and what is the diameter from north to south?

A. Well, I would say it was about from nine to ten miles.

Q. 47. And what is it from east to west?

A. Well, it is probably twelve miles.

Q. 48. What forms the Basin, what forms the rim of the Basin, I mean?

A. The mountains surrounding it, the big fork, and the little fork, and the Pake Mountains form the Basin.

Q. 49. Isn't there a water course that runs through the Basin?

A. Yes, sir, the Ocoee River and its tributaries.

Q. 50. How far from the banks of the Ocoee River is the smelting plant, and the stack of the Tennessee Copper Company?

A. It is three or four hundred *years*.

Q. 51. What is the height*h* of the stack of the Ducktown Copper Company at the present time?

A. Well, it is about seventy-five to eighty feet I suppose.

731 Q. 52. Has that stack been increased or decreased in height*h* since the company began operations in 1891, or is now about the same height*h* it has always been?

A. About the same height*h* it has always been.

Q. 53. What about the stack of the Tennessee Copper Company, has that always been the same height*h*?

A. No, sir. I do not know just what year, but they increased the height*h* of the stack until it is three hundred and odd feet, I believe in 1904 or '05.

AGREEMENT.—It is here agreed that the stack of the Tennessee Copper Company is — feet high, and that it was put in operation in — 19—?

Q. 54. Has the Tennessee Copper Company been operating with that tall stack since it was blown in?

A. Yes, sir.

Q. 55. To what extent have the ores treated by the Tennessee Copper Company been converted since 1906, and '07, or thereabouts, if you know; I am asking as to whether they have been run into a mat, or whether they have been refined, if you know, tell us?

A. I do not know what they have done all the time, I know they made almost pure copper, but I cannot say as to what they have done all the while. I do not even know what they are doing right now. I do not know what percent copper they are making at the present. They have converted them, they did convert the ores into almost pure copper.

Q. 57. Since 1907, has there or not been a period of time when the mat of the Ducktown Company was shipped over to the Tennessee Copper Company's plant, to be converted into pig?

A. Yes, sir.

Q. 58. Do you know what period of time that course was followed?

732 A. No sir, I could not tell you just the length of time they did. I know they bought and shipped it to the Tennessee Copper Company's plant. For the past twelve or fifteen months, what has been done with the mat that has been made by the Ducktown Copper Company? Well, I worked at Isabella, at their plant a part of the time, and they are shipping it away, but I do not know just where. They are loading it into railway cars and shipping it.

Q. 59. Has the Duckton Copper Company ever had a refinery and refined its ores into copper pig?

A. No, sir.

Q. 60. When was the acid plant of the Ducktown Copper Company, the sulphuric acid plant put into operation?

A. I believe, I do not know just when it was blown in, but I think it was blown in in 1907 or '08.

Q. 61. Do you recall whether it was during the year 1909 that the sulphuric acid plant was put into operation?

A. Yes, sir, I am satisfied it was put into operation then, because I worked on the construction of the plant in 1908.

Q. 62. Do you know when the acid plant of the Tennessee Copper Company was put into operation?

A. Well, it was some time later. I do not know whether they started in 1910 or '11, I am not sure.

Q. 63. Do you think the Tennessee Copper Company's acid plant was placed in operation after the other one, or before?

A. Afterward if I am right,—before,—no, I will take that back, I was mistaken, it was before.

Q. 64. Mr. Witness, how close have you lived in an average to the plant of the Ducktown Copper Company, since July, 1907?

A. I have lived about a mile and a half from the plant, the same place I am living now.

Q. 65. And during this time, have you frequently or not been to

the plant of the Tennessee Copper Company at Copper Hill?
733 A. Well, I have passed by the road, by it, but I have not been up on the plant, around the plant very much, occasionally, but not very often.

Q. 66. Have you travelled in and out of the Ducktown Basin frequently, and over the Basin since 1907?

A. Yes, sir.

Q. 67. What would you say is the relative size of the operations of the two companies, their furnaces and the acid plant?

A. Well, I know that the Tennessee Copper Company's plant is very much larger than the Ducktown Company's. I have been in the plant, through it.

Q. 68. How many furnaces has the Tennessee Copper Company?

A. Well, I am not sure about that. My understanding is they have seven, but I am not positive about that. I have not been on the plant right recently.

Q. 69. How do they compare in size with the furnaces of the Ducktown Company?

A. Well, the furnaces that the Ducktown Company has now and them, there is not very much difference in the size.

Q. 70. How many furnaces has the Ducktown Company?

A. Well, it has two furnaces, they have one partially torn out at the present time, I understand.

Q. 71. Do you know whether or not since 1907, during the going season, whether they operated but one furnace?

A. Well, I could not say about that, no. It has been my understanding, but I do not know positively.

Q. 72. Now, tell us since the acid plant of the Ducktown Company has been in operation, whether they have made much or little sulphuric acid?

A. Well, I have worked there at the plant some, and I have seen them loading from three to four cars of acid a day.

Q. 73. Is that acid loaded into steel tanks?
734 A. Yes, sir.

Q. 74. One tank to a car?

A. Yes sir.

Q. 75. Where is it shipped to, do you know?

A. No, sir, I do not know where they ship it to.

Mr. DRAKE: I except to that question and answer because that is an opinion, and the company can furnish the best evidence and give us the exact proof, or ought to at least. There is better evidence in the books and records of the company.

Q. 76. State whether or not the shipments of acid are daily?

A. They are not every day.

Q. 77. State whether or not the method of operation, the extent and volume of operations, have been substantially the same since 1907?

A. Yes, sir.

Mr. DRAKE: We except to that also, as it is purely a conclusion and an opinion, and he is not an expert and has not qualified as such.

Q. 78. Since the acid plant of the Ducktown Company was placed in operation, and since the plant of the Tennessee Company, the acid plant has been operating, what has been the condition of vegetation, in the Ducktown Basin, has it improved or not?

A. Yes sir, it has improved.

Q. 79. Before the open heap roasting was ceased, to what extent had the wood or timber been cut off the Ducktown Basin?

A. Well, a great deal of it had been cut off.

Q. 80. What was done with the wood?

A. It was used to roast the ores, and for firewood, and so on.

Q. 81. Since these acid plants were installed, what has been the general course as to gardening and the growing of grain
735 and vegetables in the gardens of the citizens living there, throughout the Ducktown Basin?

A. Well, since the acid plants have been in operation quite a good many people raise gardens in and around Ducktown, fruit trees and so forth.

Q. 82. Have you or not seen tomatoes growing in the Ducktown section?

A. Yes, sir.

Q. 83. Peaches?

A. Yes sir, I have raised peached myself.

Q. 84. What size do they grow?

A. I think I have raised as fine peaches as I ever saw grow anywhere in North Georgia, or any other country.

Q. 85. What years have you grown your peaches, Esquire?

A. Well, I have had some peaches now continuously for eight years, except one year when they were killed by a frost.

Q. 86. What was the condition of gardens and fruit in the Ducktown Basin during the year 1913,—last year?

A. I had a splendid crop of peaches. I did not raise any garden myself, but my neighbors who live right around me had gardens which were pretty fair.

Q. 87. What kinds of vegetables are grown in the gardens?

A. I saw men just across the street up there, two or three men have gardens this year, that would have beans, cabbage, tomatoes, potatoes, and corn and such.

Q. 88. What village do you live in, 'Squire?

A. I live in Hiwassee, Ducktown postoffice.

Q. 89. And what is the name of the postoffice at the site of the Ducktown Copper Company?

A. Isabella.

Q. 90. During the time that the open heap roasting was practiced, and up to the time the acid plants were put into operation, was it possible to raise vegetables, gardens and fruit, in the section where you live, and throughout the Ducktown Basin, 'Squire?

736 A. I do not think there was a living tree of any kind. I am sure there was not, nor down in there could you raise any kind of garden vegetation.

Q. 91. What is the difference in population, if any, since the

companies began the operations? What is the population of what is known as the Ducktown section now?

A. Well, I suppose there is ten to twelve thousand people in the Basin, close to that. I taken the census for part of my district in 1912 for the United States.

Q. 92. Before the operations were commenced there, what was the population of the Basin, before the smelting operations?

A. I do not think it would exceed from ten to twelve hundred people.

Mr. DRAKE: We except to the question and the answer as irrelevant.

Q. 93. How are those people in the main maintained, how do they subsist?

A. From the mines and operations.

Mr. DRAKE: For the same reason we object to that question and answer.

Q. 94. Have you been over the territory in Georgia immediately adjacent to the Ducktown Basin?

A. Yes, sir.

Q. 95. How recently, and how often?

A. Well, I have not been over it since last year. I think for the last three or four years previous to that, I have been over the country every year.

Q. 96. How extensively have you observed, and what has been your opportunity for observing that North Georgia territory adjacent to Tennessee, and directly adjacent to the Ducktown Basin?

A. Well, I have been all over the land of the different owners there, and in Fannin County and Gilmer County, and part
737 of Pickens County, for the purpose of ascertaining what the damage was to the lumber, timber and vegetation.

Q. 97. Were you sent out as a member of a party for the express purpose of taking observations as to whether damage was being done?

A. Yes, sir.

Q. 98. And that you say has been during the last three or four years?

A. Yes, sir.

Q. 99. Probably what number of days would you spend on a trip in making these observations?

A. Well, last year I believe we were out at one time probably twenty days, and I was out at other times a day or two at a time. I do not know just how many days.

Q. 100. Were you a member of the party composed of Mr. Shiflett, who for a number of years, has been chief mining inspector of Tennessee?

A. Yes, sir.

Q. 101. And were you with Prof. Bane of the University of Tennessee at the time?

A. Yes, sir.

Q. 102. And with Mr. Hughes, a brother of Judge Hughes of the court of Civil Appeals of Tennessee?

A. Yes, sir.

Q. 103. What did you find to be the conditions of crops, vegetation and timber in this section of Georgia, that lay immediately adjacent to the Ducktown Basin, the Ducktown section?

A. We found the crops and vegetation more in advance of anything I expected to find as far as conditions were concerned. The fact was, if there was any smoke damager there, I never saw it.

Q. 104. From your experience, do you think you would have been able to detect damage if there had been any to the
738 crops and vegetation in that Georgia section?

A. I think I would.

Q. 105. Did you go out especially for the purpose of ascertaining the damage done to the land of a Mr. Vestal, and his son, who are having some litigation with the Ducktown Copper Company?

A. Yes, sir.

Q. 106. And did you or not go over various other lands in North Georgia circuit, near to this Basin?

A. Yes, sir, we had to go over other lands in order to get from one to the other.

Q. 107. What quality of apples did you find in the section that you travelled?

A. The apple crop was not so good last year as it was the year before. The year before that was the finest apples I almost ever seen.

Q. 108. What seemed to be the trouble last year?

A. Well, I do not know, the trees were not full. I do not know whether frost or what was the cause of it. The apple crop was not so good, anywhere I saw it, in that section of the country, as it was the year before.

Q. 109. Do you know whether the apple crop in North Georgia varies?

A. I think it does, anywhere that I ever observed.

Q. 110. What was the condition of the corn crop, during the last three or four years, and other grain in the North Georgia section?

A. The crops were in splendid condition, those that I observed, of course occasionally you will find poor land, and very poor crops. But if you have good land you have good crops.

Q. 111. Do you know whether or not there were late frosts in the spring of 1913, in that section?

A. Yes, sir. There was not a good fruit crop in the mountain country either.

739 Q. 112. Due to that fact?

A. Yes, sir, except an occasional orchard that was sheltered in some manner.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 113. What is your occupation, Mr. Maughan?

A. I am construction foreman on the pike road at the present time for Polk County.

Q. 114. What has been your occupation before that?

A. Well, I have been construction foreman for the Copper Companies at different times, and for the country also in building roads.

Q. 115. How much time have you, since you have been construction foreman on the roads devoted to that?

A. How is that?

Q. 116. How much time have you devoted to your road construction as foreman?

A. Well, I worked on the pike road year before last a part of the year, and a part of the year before that, almost continuously.

Q. 117. Last year?

A. Yes, part of last year and then I have been working on the pike road again now for six or eight weeks since they began building.

Q. 118. The other part of the year what did you do?

A. I worked part of the time for the Ducktown Company. No, no—that was all the work I did last year. A part of this year I worked for the Ducktown Company.

Q. 119. Now, I did not exactly understand what you meant about last year you say you worked for the company, explain that?

A. I worked on the roads I said, last year, that is about the kind of work I did, pike road, and this year, I worked a part of the time for the Ducktown Company.

740 Q. 220. That is what I am trying to get at, how much time did you devote to this company last year?

A. To the Ducktown Company, oh, the number of days we were out, probably about twenty odd days that we were out in the timber.

Q. 221. How long have you been in the employ of the Ducktown Copper Company; since you first began working for them?

A. I have been out inspecting timber from year to year, not every year, but occasionally from 1906,—four.

Q. 222. 1904?

A. Yes, sir.

Q. 223. Well, what was the first day that you were out?

A. Well, I could not give the date exactly. I have forgotten. I have got a record of it, but I have not got my book here and cannot give you just the date.

Q. 224. You cannot give me anything near the date?

A. Well, it was in the fall, but I could not give you just the date.

Q. 225. Where did you go to the first time?

A. I went on to Jacks River.

Q. 226. Whose farm?

A. Nobody's.

Q. 227. Who was with you?

A. Mr. Reese, Mr. Shiflett and Miller, and Witt and others.

Q. 228. How far in Jacks River from the Ducktown Copper Company?

A. It is about twelve or fourteen miles.

Q. 229. Where did you go from there the next day?

A. We camped on Jacks River for a period of about something like twenty days.

Q. 230. Twenty days?

A. Yes, sir.

741 Q. 231. State if you stayed right there in that same neighborhood?

A. Yes, sir.

Q. 232. And from there did you go back home?

A. No, sir, we broke up camp there and went to above Ellijay, on the head of the river, and examined some property up there.

Q. 233. What property up there?

A. The property that belonged to Vestal.

Q. *224*. Whose property were you examining on Jacks River?

A. The Vestal Lumber Company.

Q. *225*. Did you examine anyone else's land except that while you were out on that trip?

A. No, we did not examine anyone elses except that, but we had to go through quite a good deal of other land.

Q. *226*. You were employed specially, were you, Mr. Maughan, for that particular lawsuit that Mr. Vestal had against the company.

A. Yes, sir.

Q. *227*. And then you went out specially, as I understand, to observe the damage to the various forests around you?

A. Yes, sir.

Q. *228*. And you could not find any damage in all that trip to the timber?

A. I never saw any smoke damage that I could feel like knowing that the smoke had done it. There was some dead timber of course.

Q. *229*. You say there was plenty of dead timber in there?

A. There was some dead timber in the country, of course, already dead, and I could not tell what killed it.

Q. 240. You could not tell what killed it, but there was plenty of timber there dead?

A. There were evidences of something on the foliage of the timber.

742 Q. 241. You did not go further out there at Mr. Vestal's insistance, did you?

A. No, sir.

Q. 242. And you did not go over there at the time he said the damage was done, did you?

A. I do not know about that, I suppose if it was damaged at all, it would be damaged all the while.

Q. 243. Don't ou know, Mr. Maughan, that this smoke damage

is easy to detect soon after it strikes a tree, or foliage or vegetation and *blithe* it?

A. Yes, sir, I know that.

Q. 244. And don't you know that is the very time to observe it?

A. Usually if it strikes the tree and damages it, you can tell it for quite a time, and it does not go off in a day.

Q. 245. And it has the effect of killing it too, doesn't it?

A. Yes, sir, it does sometimes.

Q. 246. And the trees you saw all through that country that were dead, may have been caused by smoke, might it not have been?

A. I do not think so.

Q. 247. On this trip you speak of, did you stop with any citizens over in Georgia, if so, who?

A. Yes, sir, when we were up above Ellijay, we stopped with Mr. Clayton.

Q. 248. Mr. who?

A. Clayton.

Q. 249. Do you know his given name, you say you stopped with Clayton?

A. Yes, sir, up on the river.

Q. 250. Don't you know that Mr. Clayton did not live up there at all?

742½ A. Above Ellipay?

Q. 251. Yes.

A. Yes, sir I call it up above, up on the river, Mr. Clayton is nine miles above Ellijay.

Q. 251. Which one of the Claytons was that?

A. I do not know how he signs his name.

Q. 252. Was that the county surveyor of Gilmer County?

A. The one that used to be county surveyor, yes, sir.

Q. 253. Where else did you stop while up there?

A. We stopped two nights with Mr. Clayton.

Q. 254. Where did you go to and who did you stop with?

A. We came back to Epworth, and I stopped all night with Mr. Cochrane.

Q. 255. Do you know which one of the Cochranes?

A. I do not know his given name, but he lives up east, a mile or so from Epworth.

Q. 256. Did you take dinner with somebody or not while out there, when you were on that trip, if so, who, the postmaster up there at A-1, do you remember man named Johnson, do you remember eating dinner with him?

A. I do not think so, I do not remember it.

Q. 257. Now, didn't these people tell you of damage and endeavor to point it out to you.

A. How is that?

Q. 258. Didn't these people with whom you stopped, point out to you damage done by smoke?

A. No, sir.

Q. 259. A lot of them did?

A. They didn't to me.

Q. 260. Did you try to find out any damage from these people.
A. I tried to find out damage myself, if there was any done, that was what I was out there for.
743 Q. 261. Did you ask the people about any particular damage that had been done to them, and try to get information that way?
A. Yes sir, I talked to lots of people.
Q. 262. Who? Who were they, name one you talked to and asked about it?
A. I talked to various parties in the Tacoea River Company, I cannot tell.
Q. 263. Commence and tell us just one?
A. I talked to Mr. Ritchie and others.
Q. 264. What Mr. Ritchie?
A. The postmaster at A-1.
Q. 265. That is one; who else did you ask?
A. Dozens of men, I could not give you the names, lots of them. I did not know at all, didn't try to find out who they were.
Q. 266. Cannot you remember one more that you asked about it, did you ask so many?
A. I might remember one more, but I would not be positive. I talked to so many I would not be positive.
Q. 267. Just tell us two more men you talked with up there, and I will be satisfied, if you talked to so many, can't you tell us one?
A. I talked to Mr. Payne.
Q. 268. Which one of the Paynes was it, Moses Payne, that you talked to?
A. I never asked him his given name.
Q. 269. Where does he live?
A. He lives in Hell Hollow.
Q. 270. Well, you do not know his given name, do you?
A. I talked to Mr. Higdon.
Q. 271. Which one of the Higdons did you talk to?
A. He is a preacher, I do not know his name.
Q. 272. Where did he live?
744 A. I do not know the names of the different localities in there. He lived on the waters of the Fighting Town Creek.
Q. 273. Who else did you talk to?
A. I heard men say they had been damaged in years previous.
Q. 274. Don't you know that this man Higdon, that you spoke of, the preacher, was hired by your party, and was one of your party at that time?
A. Mr. Higdon was—He surveyed out the lands there and taken us over them.
Q. 275. Why did you name him as a man, when he was hired on the same business that you were hired for?
A. Well, a man being hired, I consider a man being hired to do a certain job of work, he can do it as honestly, and is just as honest and nice a man as any other man.
Q. 276. I wish you would give me the name, or names of some

people that were not hired by this company, and not members of your party, if you can give them?

A. I have given you all the names I can.

Q. 277. Did Johnson, the postmaster at A-1 tell you of any damage?

A. I do not remember if he did. I would not care to tell you so if they said so, because I know lots of people over there who claimed that they have been damaged, when they have not had any damage done.

Q. 278. I will ask you if it is not a fact that Johnson, the postmaster did not point out smoke to you, and show it to you at the time, and you could not recognize it, and would not agree to it, cannot you remember that?

A. Now, if he did I do not remember it at all. I do not remember a bit of it if he did. I would say this, if he did, or tried to, I would not care to say at all.

Q. 279. How many times have you been a witness for this
745 Copper Company.

A. Well, I have been a witness quite often, I could not give you the number of times.

Q. 280. And the garden that you spoke of raising, and your neighbor raising, is not in the state of Georgia at all, as I understand, but about four miles and a half from the state line, isn't it?

A. Yes, sir, about a mile and a half nearer the Copper Company's plant.

Q. 281. That is what I understand, and immediately north of the Copper Company's plant, as I understand?

A. I am about north of the plant where the southern wind ought to bring the smoke.

Q. 282. All you know about the conditions in Georgia are when you are hired by the company to go over there, when they had a lawsuit with Mr. Vestal?

A. I have been in Georgia lots of times when I was not hired by the company.

Q. 283. How is it Mr. Maughan, that you can remember with such detail how this old company operated its plant, and all the different methods, and you cannot remember last year, the men you met over in Georgia on that trip, and you were a boy during the time this old company operated?

A. Well, I will explain that this way. There are a great many things happened when I was a boy that I remember a great deal more distinctly than I do things that happened last week. I do not know why it is I have got my notes on this Georgia matter, but I am very poor on remembering names, but I could sit down and think probably, and give you twenty-five men I have talked to in that country about smoke conditions, probably more than that.

Q. 284. But, I said you can remember the date that these old companies operated, and everything like that, but cannot remember the date you were over in Georgia last year?

746 A. Well, I did not give any date accurately on the old company's work.

Q. 285. How do you know that under the old method that the sulphur was released into the air, and that under this new method it is let into the mat?

A. I know that the old company made mat, that was copper, that was almost pure copper, because I have seen it handled, handled it, and I know that it was almost pure copper.

Q. 286. But you are no expert?

A. I am no expert, no, sir. I can tell pure copper almost when I see it.

Q. 276. Now, Mr. Maughan, the garden you spoke of over where you lived at Ducktown Station?

A. At Ducktown proper.

Q. 277. At Ducktown, that is the name of it?

A. Yes, sir.

Q. 278. I will ask you if there is not quite a high mountain between that and the Ducktown Copper Company's present plant?

A. No, sir. I have built a pike road right down from our town to the Ducktown Company's plant, and I do not suppose there is a grade of three percent going towards Isabella on the line of roads, probably not more than two percent.

Q. 279. But, don't you know, Mr. Maughan, that the roads crook around and that those houses there at Ducktown are back in a cove, and that a mountain lies right back of them, and protects them from the smoke?

—. ——.

A. The Copper Company's plant is between Ducktown and the mountain?

A. Yes.

Q. 280. You say there is no mountain between those houses at Ducktown and the company's plant? An air course, I mean?

A. No sir, there is some ridges and hills, but in an air course, there might be a range of hills, but no mountain.

Q. 281. Well, hills isn't it, a high hill three or four hun-

747 dred feet high?

A. Yes, there are some high hills and ridges between the Ducktown Company and Isabella.

Q. 282. And is not it a fact that where a section is protected by mountains, that vegetation will grow on that spot, and on the opposite side, next to the plant, it will be entirely denuded of vegetation?

A. I did not get that.

(Question read.)

A. Yes, there is some truth in that. But there is no mountain between Ducktown and Isabella.

Q. 283. Will you please describe the effect of these fumes on vegetation in detail?

A. Well, when the smoke settled down in the country, you do not notice the effect of the smoke until likely the smoke clears away, and the sun comes out, and it parches the leaves of the vegetation almost like frost, turns white, or the parts that are affected.

Q. 284. How soon after will the effects show up on growing vegetation?

A. It will show up almost immediately after the sun shines on it.

Q. 285. You mean, that is on forests, and any other green vegetation?

A. Any other vegetation that it has effect on it, yes, sir.

Q. 286. Were you one of the parties that examined J. Y. Allen's farm up near Blue Ridge?

A. We examined a corn crop up there once. I do not know, I do not know who the corn belonged to, or who the land belonged to. I was there with a party that looked at a corn crop.

Q. 287. When was that?

A. I believe that was in 1912.

748 Q. 288. I will ask you what report you made on that, and what did you swear about it in that case of Shippen versus Ducktown Copper Company, in regard to Allen's corn?

A. I do not remember that they asked me any question about the corn crop, I do not believe they did.

Q. 289. I will ask you if you did not swear that there was eighty bushels of corn in your judgment, on that land?

A. I may have done that, I believe there was. I believe there was.

Q. 290. Well, will you swear that as a fact, that there was in the neighborhood of—you know something about corn?

A. I will swear that I believe there was, that is as far as I can swear about it. That is my opinion. I know one thing, I could tell you good and proper and plain, it was about as fine a crop of corn as I ever looked at.

Q. 291. Mr. Maughan, when you were on this trip of inspection for the Copper Company, you let the people through there know what your business was, did you?

A. We did not hide out, we were open.

Q. 292. Please answer the question.

A. We were open and above board, and told lots of people what we were doing. We did not get out and tell people all over the country that was what we were out there for, or course, but we told lots of different citizens.

Q. 293. I will ask you if you did not tell the people generally throughout that country that you were there inspecting a route for a new railroad?

A. How is that?

Q. 294. Did you not generally tell the people throughout that North Georgia country where you were, that you were there inspecting a route for a new railroad?

A. I do not have any recollection that I told anybody that.

749 I may have told them, but if I did, I do not remember anything of it. I did hear some of the crowd say they had told some fellows that.

Q. 295. Do you know the altitude relative to the Tennessee Copper Company, and the Ducktown Company?

A. No, sir, I could not give it definitely.
Q. 296. I will ask you if it is not higher?
A. The Ducktown Company's?
Q. 297. Yes.
A. No, but I imagine there is not very much difference in the altitude, but I am not sure about that, from the base of the tracts where the difference would be.

Mr. DRAKE: That is all, I think.

Redirect examination.

By W. N. MILLER, Esq.

Q. 298. What particular position do you hold, or have you held in your county, 'Squire?
A. You know I don't hold any. I was justice of the peace for sixteen years.
Q. 299. For the Ducktown section?
A. Yes, sir.
Q. 300. By whom were you engaged to do this pike road building on behalf of the County?
A. I was engaged by Mr. Cox, superintendent of pike road construction, a Chattanooga man.
Q. 301. Did you have any other purpose, mission or instruction when you went out at the instance of the Ducktown Copper Company, in the North Georgia Section, except to honest ascertain and truthfully report the facts and conditions as you found them?
A. That is all the instructions I had.
Q. 302. Did you have a penny's worth of interest in the results one way or the other?
A. No, not a penny.
Q. 303. Did you, to the best of your skill and ability,
750 discharge the duty for which you were sent out?
A. I did.
Q. 304. State whether or not your associates, so far as you observed were honest and conscientious in the discharge of their duties?
A. I think every man was.
Q. 305. Was their any efforts of concealment, or any evidence of concealment, or bad faith practiced by any of the parties so far as you know?
A. Not a thing.
Q. 306. In going to the Jacks River section, from what point did you start, and what route did you take to get to Jacks River?
A. I was working on the pike road at the time, and I was working at the Tennessee Copper Company's plant. The wagons came along and picked me up, and I went through Copperhill, and through Fighting Town Creek, across the Blue Ridge, and to a fellow by the name of Jones, on Jacks River.
Q. 307. What general direction did you travel to Jacks River,

from the site of the Tennessee Copper Company's plant to reach the Jacks River camp?

A. It is almost west.

Q. 308. State whether or not after fixing this camp on Jacks River, your party rode in all directions from that camp?

A. Yes sir, in every direction.

Q. 309. Probably how many miles would you travel daily throughout the various forests, and places there in an effort to ascertain the conditions?

A. Well, we would probably on an average,—ten or twelve miles mountainous country, rough country.

Q. 310. Did you have horses?

A. Yes, sir.

Q. 311. Did you ride all the time?

A. No, sir, a good deal of the time in many places, we
751 would have to get down and walk through the ruts.

Q. 312. Did you or not on this trip, pass over the sides of the hills and the mountains that faced the Ducktown Basin?

A. Yes, sir.

Q. 313. If there would be any damage done — smelting operations in that North Georgia section, on which sides of the hills and mountains would it be visible?

A. It ought to show up on the east side of the mountain.

Q. 314. That is, if it faces the Basin?

A. Yes, sir, if it faces the Basin.

Q. 315. In what condition did you find the crops and timber on the side that faced the Ducktown Basin, there in North Georgia?

A. I actually in that country there, never saw a brown leaf that I thought the smoke burnt.

Q. 316. What condition did you find the apples and the corn crop in, and the gardens?

A. As I said a while ago, the apple crop was not so good last year as the year before. They had the finest apples through that country I thought I ever saw grown.

Q. 317. In 1912?

A. Yes.

Q. 318. From what locality did your camp and party get their supplies of vegetables and fruit while they were out those twenty odd days, in that Jacks River section?

Mr. DRAKE:—Note an exception to the question and answer, for the reason that this is original proof, and should have been brought out in chief, and the proof is but a repetition of what has been gone over, for that reason also, I object to it.

A. Well, we bought produce from the country people around about us.

752 Q. 319. And what was the character of the produce that was thus brought in from the farmers?

A. Mighty nice potatoes and tomatoes.

Q. 320. Good quality?

A. Yes, sir.

Q. 321. Now, Mr. Vestal's land, *who* land you went out especially to inspect on that trip, I will get you to state whether or not he claimed a large domain and very much scattered in that North Georgia section?

A. Yes, sir.

Q. 322. How close were the nearest lands of his to Ducktown?

A. I suppose he had some land within two or three miles of the Tennessee Copper Company's plant.

Q. 323. Did he himself live on a tract of his land up at Epworth?

A. Yes, sir.

Q. 324. How far is Epworth south from the plant of the Tennessee Copper Company, how far from that point to the other?

A. It is not more than two or three miles.

Q. 325. Mr. Vestal and his son claimed thousands of acres through that section?

A. Yes, sir.

Q. 326. State whether or not they were all contiguous or are there intervening *lens* between them.

A. There are intervening *lens* between them.

Mr. DRAKE: We except to that because it is original evidence, and should have been brought out in chief.

Q. 327. What did you say about the southern wind-, what would they be supposed to do if there was any fumes around from the Ducktown plant?

A. How is that?

Q. 328. In your cross examination, I believe you said something about the winds blowing from the south, what effect
753 would they have?

Mr. DRAKE: I object,—I beg your pardon, I did not go into that at all.

Mr. MILLER: I asked the witness what he said, and if so, to tell us what he said, what effect the southern winds would have, if there are any fumes arising from the Ducktown plant?

Mr. DRAKE: We except to the question, because nothing has been brought out in chief, or on cross examination about the southern winds or the effects they would have, and it should not be brought out in rebuttal.

A. My answer to him was that I lived north of the Ducktown Company's plant, and that if there was a south wind, it would blow the fumes over there on my place.

Q. 328. From what general direction do the winds blow generally in the Ducktown Basin, during the growing season?

A. They are north and south, either from the north to the south, or from the south to the north.

Q. 329. If they were blowing from the south, as I understand, they would bring the fumes right over where you live?

A. Oh yes.

Q. 330. When you made the statement on cross examination

about the old process of refining these copper ores, did you refer to the Union Consolidated Company?

A. Yes, sir.

Q. 331. How far is Ducktown Station, which I understand is on the L. & N. Railroad, from Ducktown postoffice, which you call Hiawasse?

A. Well, the pike road is about two miles, the air line I suppose would be about a mile and a quarter or a mile and a half.

Q. 332. State whether or not there are various ranges of hills between the plant of the Ducktown Company at Isabella and this North Georgia Section, or Jacks River Section?

754 A. Yes, sir.

Q. 333. State whether or not there are some large mountains intervening,—before you reach the Jacks River section and North Georgia proper?

A. Yes, sir, the Blue Ridge between Jacks River and the Copper plant.

Cross-examination.

By Mr. DRAKE:

Q. 334. What do you mean when you say grownig season?

A. How is that?

Q. 335. What do you mean by growing season?

A. I mean the summer time.

Q. 336. From when to when?

A. Well, it is in different countries, it is different times, in our country it begins in May and ends along in September and October.

Q. 337. I speak with reference to the North Georgia section of that country?

A. Well, that is about the season, because it begins about the last of April and closes with September.

Further this deponent saith not.

The distance travelled by this witness to and from his home to the place of taking depositions, was 228 miles.

755 JASPER M. CENTER, the next witness, being first duly sworn, upon examination, deposed as follows:

Direct examination.

By W. B. MILLER, ESQ.:

Q. 1. How old are you?

A. I am fifty-nine years old.

Q. 2. Where do you live?

A. Ducktown.

Q. 3. Ducktown Station, or Ducktown postoffice?

A. Ducktown proper.

Q. Well, that is Ducktown postoffice.

A. Yes, sir.

Q. 5. How long have you lived there or in that immediate section?

A. Well, I have been born and raised there outside of about thirteen years of my life.

Mr. DRAKE: You will have to talk louder.

A. I have been there all my life, but about thirteen years.

Q. 6. When were you away from there?

A. During the shut-in of the mine.

Q. 7. That was before the Ducktown Company began to operate?

A. Yes, sir.

Q. 8. What business are you engaged in?

A. Livery business.

Q. 9. How long have you been a livery man?

A. How is that?

Q. 10. How long have you been in the livery business continuously?

A. About twenty-two years.

Q. 11. Did you have occasion in the year 1912 or 1913, one or both, to visit the North Georgia section of the country, at the instance of the Ducktown Copper Company?

A. Yes, sir.

756 Q. 12. Probably how many days were you out on either trip and how many trips did you make?

A. I do not remember, but I think I was out about eight days on one trip, and I do not remember the other, five or six days, but I do not remember the days exactly.

Q. 13. What year?

A. I believe that has been a year ago, one or two years ago.

Q. 14. How many trips were you out?

A. I was out two trips.

Q. 15. What sections of the country did you travel over?

A. Well, out of Ducktown into Georgia towards Ellijay and Jacks River, and Cowpen Mountain, around through that way, towards the Blue Ridge.

Q. 16. Did you go from Ducktown out into and through the section of country that lies immediately south of the Tennessee line in North Georgia?

A. Yes, sir.

Q. 17. Provided with horses?

A. Yes, sir.

Q. 18. Whose land, especially, were you inspecting, or looking over at that time?

A. Well, we were looking over the Shippin Brothers' land *and* one time, and Vestal's land.

Q. 19. That is J. P. and J. A. Vestal?

A. Yes, sir.

Q. 20. And Shippin Brothers, the land that belonged to Shippin, one of whom is present here today?

A. Yes, sir.

Q. 21. Now, in travelling through that section of country from

one body of these lands to another, could you take observations of the timber, vegetation, crops and gardens, generally?

A. Yes, sir.

Q. 22. During what seasons were you there?

757 A. What season?

Q. 23. Yes, what month?

A. I do not,—I believe in September or October.

Q. 24. What condition did you find the crop and gardens in?

A. I did not see anything wrong with them.

Q. 25. How did you find the grain and apples, corn and other grains and fruit?

A. They were good.

Q. 26. Have you frequently seen the effect of smoke, called sulphur smoke, that issues from the roasting yards and from the stacks of those furnaces; have you witnessed the effects of that on vegetation?

A. Yes, sir.

Q. 27. Do you know how it effects timber and crops when it strikes it?

A. Yes, sir.

Q. 28. State whether or not you detected any damage of that character in the North Georgia Section through which you travelled on these two occasions, that you were out?

A. No, sir, I do not think that we did.

Q. 29. State whether or not you were out at Mr. Vestal's home place, at Epworth, on this trip?

A. Yes, sir.

Q. 30. Were you at the camp on Jacks River.

A. Yes, sir.

Q. 31. Since the acid plants of the two companies were put in operation, say since 1908 and '09, what, if any, change, have you noticed in the condition of the crops, vegetation and timber in the Ducktown Basin, and North Georgia Section?

A. Yes, sir.

Q. 32. I say, what change do you find?

A. I find it better than it has been before, find a good

758 condition.

Q. 33. You say you live in Ducktown, the village called Ducktown, the Ducktown postoffice?

A. Yes, sir.

Q. 34. State whether or not crops of vegetables are raised in the village of Ducktown, and in that immediate section?

A. Yes, sir, sure.

Q. 35. What character of vegetables and fruit are grown there, what kinds and what quality.

Mr. DRAKE: Wait just a moment, I except to that, because it is irrelevant and immaterial to the issues here, as to the conditions in North Georgia.

Objection overruled, and appeal prayed and granted.

A. There is peaches, tomatoes, cabbage, beans, onions, and rad-

ishes, and about all the garden vegetables that grow, they are raised there, I have raised them, not the peaches, but raised the others.

Q. 36. Now, how was it before the acid plants were installed?

A. We could not raise anything.

Q. 37. How were the crops that you saw in this North Georgia section, and the fruits that you saw there in 1912 or '13, as compared with the crops and fruits you saw in other sections of the country, hundreds of miles away from the Ducktown Basin?

A. So far as we seen in there, they are about the same.

Q. 38. Did they appear to be affected in any way as the result of the smelting operations, or the copper smoke?

A. No, sir, not that I could see.

Q. 39. Mr. Center, have you any stock, or any interest in the Ducktown Copper Company?

A. No, sir.

Q. 40. Did you have any object in view except to honestly
759 ascertain and faithfully report the facts as to the conditions that you found when you went on that trip.

A. No, sir.

Mr. MILLER: That is all.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 41. Mr. Center, had you worked for this company previous to last year when you were out of their employ?

A. No, sir. How long a time back?

Q. 41. Any time, and if so, when and how much?

A. Yes, sir, I worked for them I believe, about seven years ago.

Q. 42. Were you ever a witness for them before?

A. Yes, sir.

Q. 43. When?

A. I was a witness here in this Vestal case, and the Shippin Brothers' suit.

Q. 44. Were you even a witness before?

A. Yes, sir.

Q. 45. In what case?

A. For the D. — C. & I. Company.

Q. 46. Yes, in any of this copper business?

A. Yes, I was a witness in this lumber company case, the Wetmore Lumber Company, whatever you might call it.

Q. 47. Were you ever a witness for them in any other suit?

A. No, sir, not that I remember of.

Q. 48. Did you ever make an affidavit for them in any other case?

A. No, sir.

Q. 49. Did you make an affidavit in the case of The State of Georgia, vs. these two companies?

A. No, sir.

Q. 50. In the supreme court of the United States?
760 A. No, sir.
Q. 51. In the years of 1906 or '07, along about then?
A. No, sir.
Q. 52. You have not worked for them in any capacity from 1907 up to last year, as I understand you?
A. Up to the present time, I am not working any now.
Q. 53. You are working there now?
A. No, sir.
Q. 54. You worked for them last year some?
A. No, sir, I have not worked for the company in any way for seven years.
Q. 55. I am speaking of this inspection work, that is work, as I call it?
A. Well, that, I have done that.
Q. 56. How much of that have you done for them?
A. As I stated a minute ago, I do not know how many days, I stated from ten to twelve days.
Q. 57. Did you ever do any work for them outside of last year?
A. Yes, sir.
Q. 58. When was that, what years?
A. I cannot give you the year, it has been some ten or twelve years ago though, in this other case I was speaking of, with the Tennessee people.
Q. 59. The Tennessee people?
A. Yes, sir.
Q. 60. Who was doing this?
A. The Wetmore Lumber Company and some others got after this company you are speaking of.
Q. 61. You have been in their employ off and on for about ten years, as I understand?
A. No, sir, I have not. I have done some work.
Q. 62. I mean in the capacity of inspector, and doing actual work there around the plant?
761 A. Well, these three times.
Q. 63. Is your name James M. Center?
A. No, sir.
Q. 64. Is there a James Center up there?
A. Not that I know of, this is James H. Center.
Q. 65. James H. Center?
A. Yes, sir.
Q. 66. Do you know whether or not there is a James M. Center up there also?
A. No- that I know of.
Q. 67. When you were over on Jacks River last year, what citizen of Georgia did you speak with at any time?
A. I believe I stayed with a man there at Higdon Station, an old man by the name of Hallum, stayed all night with him.
Q. 68. Where does Hallum live?
A. He lives somewhere near Higdon Station, right down over there in Georgia.

Q. 69. Well, who else did you stay with or eat with while you were over there?

A. I believe a hotel in Blue Ridge, but I cannot call the name of the house, in the lower end of the little town on the railroad there, I do not remember the name of it.

Q. 70. Who did you stay with in the country, Mr. Center, or get dinner with? Do you remember getting dinner up there with a man named Jackson?

A. No, sir.

Q. 71. A-1?

A. No, sir, I never was at Jackson's.

Q. 72. Do you remember talking with Jackson?

A. No, sir.

Q. 73. Were you at A-1?

A. Yes, sir, I took dinner with that Jackson. I believe that is his name.

762 Q. 74. You took dinner with him?

A. Yes, sir, I believe I took dinner with him.

Q. 75. Did not any of these men you stopped with, or talked with, point out damage to you?

A. No, sir.

Q. 76. You say none of them did?

A. No, sir. I just taken dinner with Jackson. He was not away from his house with me.

Q. 77. Didn't Jackson go up on the hill there, on the side of the mountain and point out damage to you, and point out the smoke?

A. No, sir, the only thing I knew of Jackson doing, he was busy selling our boys whiskey while I was there, that was all he pointed out to me.

Q. 78. You bought some of it didn't you?

A. No, sir.

Q. 79. None of your party did not buy whiskey from him?

A. I do not know who bought. I seen him trying to sell some to parties coming there who were not with us at all.

Q. 80. I will ask you if some of your men, Higdon, that preacher, did not buy some and get about half drunk on it, on Sunday?

A. No, sir, he may have got the whiskey, I do not think he was drunk, and I did not see him drinking.

Q. 81. I will ask you if your crowd was not drinking whiskey while you were up there?

A. They might have been drinking some of this they got from him that day.

Q. 82. Now, Mr. Center, on all the rounds you have gone over here to Mr. Miller, you could not find any damage at all to trees, crops, or any other kind of vegetation?

A. Not by smoke, no sir.

Q. 83. Do you remember seeing a man named Winthrop up there?

763 A. Yes, sir.

Q. 84. Did you talk with him?

A. Yes sir.

Q. 85. Did you talk with him?

A. Yes, sir I stayed all night with him.

Q. 86. I will ask you if he did not point out damage to you?

A. No, sir, he did not point out any. He pointed out some damages to his orchard, and I went all over it talking to him one Sunday morning, and the parties that were with us, talked to him about it. He lived in Kentucky, he had some trees, and he said he had some black bark and some kind of bore worm, and we explained to him that that was what was killing his trees.

Q. 87. And old man Winthrow agreed with your men that it was not the smoke?

A. Yes, sir.

Q. 88. Which one of the Winthrows was that, W. J. or J. W.?

A. I do not remember which one it was, an old like man.

Q. 89. Where does he live?

A. I do not remember what street he lives on, it seems to me north of Ellijay somewhere, on the creek.

Q. 90. I will ask you if he did not live out on Mountain Town Creek?

A. I believe he did. I would not be positive. I am not acquainted with the streams well enough for that.

Q. 91. What time of the year were you out there on that trip, your party?

A. I am not positive, I believe it was in September.

Q. 92. Don't you know it was in October and November, after frost?

A. No, sir, I think it was along the last part of September, but I am not positive about those dates.

Q. 93. Don't you know at the time you were there frost had already fallen and killed a big part of the leaves?

764 A. I won't say, it may have. I won't say that it did or did not.

Q. 94. Did not you swear on a previous examination about this same matter, that frost had fallen and killed the leaves?

A. I do not know sir that I did. I may have. I do not think that I did.

Q. 95. In the case of Shippin Brother- and Company against the Ducktown Company, you say you do not know how that was?

A. How is that?

Q. 96. What was your answer to that question?

A. About that frost. I am not positive. I believe they had frost positively while we were out, or before, something near that.

Q. 97. Was it before?

A. Yes, sir, possible frost had fallen. I won't say positively, but I believe there was.

Q. 98. In the other case of Shippin Brothers Company against the copper company, did you not swear that you did not know much about sulphur smoke damages?

A. No, sir.

Q. 99. And that you could not tell it when you saw it?

A. No, sir.

Q. 100. You did not swear that?
A. No, sir.
Q. 101. You can tell it then?
A. Yes, sir.
Q. 102. And if there had been any damage over there on this trip you could have seen it and known it?
A. Yes, sir, I think I would.
Q. 103. I will ask you Mr. Center, if there was not a great deal of dead timber all through the forest from the time you entered Georgia, clear down as far as you went?
A. Yes, sir.
765 Q. 104. And practically all the timber, big timber was not entirely killed or partly dead?
A. No, sir.
Q. 105. Especially such varieties as oak and hickory?
A. No, sir, I could not tell. There was chestnut and oak timber that was dead more than any other timber we saw.
Q. 106. How about the hickory, had not that all been killed?
A. I do not know as I seen very little of it. I did not see much hickory timber of any kind.
Q. 107. Did you visit a man named J. Y. Allen, and inspect his crop at Blue Ridge, in Fannin County, Georgia?
A. Corn crop?
Q. 108. Yes?
A. Yes, sir.
Q. 109. Did you make a report on it?
A. Yes, sir.
Q. 110. And swear to the condition of the crop in the case of Shippin Brothers?
A. Did I make the report on it?
Q. 111. Yes.
A. I am not positive, but that I did.
Q. 112. You swore to it in the case of Shippin Brothers?
A. He had a mighty good crop of corn, I know, I do not know whether I made the report, but I know that.
Q. 113. How many bushels of corn to an acre would he made?
A. Just guess at the crop. I guess it would make from twenty-five to thirty bushels per acre, I do not know. I may have been mistaken in the amount to the acres, but it was good corn.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 114. You were asked about hickory timber, what kind of land does hickory timber grown on?
A. Sir?
766 Q. 115. What character of land is hickory timber grown on?
A. I could not say about that, there is very little hickory timber I ever seen scattered. There is no groves of hickory that I have ever seen in my life.

Q. 116. Did you ever see forests where there was not a percentage of dead timber?

A. No, sir, I have not.

Q. 117. State whether or not the chestnut oak timber throughout the whole east Tennessee section has been dying during the past few years?

A. It has.

Q. 118. The chestnut oak has what has been the condition of the chestnut oak throughout East Tennessee?

A. During this trip we were inspecting all down in Pickens County. The most dead timber through there I have seen anywhere.

Q. 119. That was how far away from the Ducktown section?

Mr. DRAKE: I except to that because irrelevant and incompetent. Objection overruled, and appeal prayed and granted.

Q. 120. How far away is that from Ducktown?

A. I could not say exactly, in the neighborhood of sixty miles.

Q. 121. As I understand you have found very much more dead timber down there than up near Ducktown?

A. I have found more there than I have ever seen anywhere in my life.

Q. 122. That was entirely away from the Copper Company?

A. Yes, sir.

Cross-examination.

By J. A. DRAKE:

Q. 123. When you were down there as a party, I will ask you if you did not tell the people generally throughout the
767 country, that you were down there, making out a route for a new railroad?

A. No, sir, I do not think anything about railroad was said. I told them what we were looking for.

Q. 124. Who, on that trip, did you tell that you were looking for smoke damage?

A. I do not know sir. That would be a hard question. I could not tell you anybody I talked to about it though, for I do not know.

Q. 125. Did you tell that fellow Jackson that?

A. Who?

Q. 126. Johnson?

A. Yes.

Q. 127. You told Johnson?

A. He knew what we were looking for.

Q. 128. Did you tell Allen, who had that oat crop?

A. No sir, I do not know Mr. Allen. I did not see him.

Q. 129. Did you tell Withrow?

A. Yes, sir, he knew what we were after.

Q. 130. Who else did you tell?

A. I could not tell you, it would be a hard matter to remember every one that we saw, there were several people.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 131. As I understand you, this man Johnson was pretty busy trying to dispense *with* wildcat whiskey, wasn't he?
A. Yes, sir, that is what the boys told me.
Q. 132. Is that the same Johnson Mr. Drake asked you if you saw, the one that was engaged in the whiskey business, selling wildcat whiskey?
A. That is the one, we taken dinner with him.

Mr. DRAKE: And that preacher that you had with you was the one that bought a lot of it?

768 A. I don't know how much he bought, they had some whiskey.

Further deponent saith not.

Sworn to and subscribed before me this 18th day of June, A. D. 1914.

____ ____,
Clerk and Master.

This witness travelled a total of 228 miles, 114 miles in each direction, in coming to the point of taking the deposition and returning to his home.

769 G. C. PARKS, a witness called for the defendant, being first duly sworn, upon examination, deposed:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. How old are you Mr. Parks?
A. Sixty-two years old.
Q. 2. Where do you live?
A. I live in Monroe County now.
Q. 3. Monroe County, Tennessee, is it?
A. Yes, sir, Monroe County, Tennessee.
Q. 4. Did you live in the Ducktown section of the country at any time, and if so, over what period?
A. Yes, sir, I moved there in 1906, the latter part of 1906, and stayed there four or five years.
Q. 5. Where did you live at that time with respect to the Ducktown Basin?
A. I lived in what is known as Hiwassee, right in the Basin.
Q. 6. That is right in the village, called the Ducktown postoffice?
A. Yes, sir.
Q. 7. And it is about how far from the plant of the Ducktown Company's plant?

A. I suppose it is some mile and a half.

Q. 8. Northward?

A. Rather east,—a little southeast of there.

Q. 9. What business did you follow while you lived there?

A. You mean in Ducktown, or the plant north, I did not get the question.

Q. 10. It does not make any difference, you tell us personally?

A. I lived a little north from Ducktown.

Q. 11. You lived a little north from what do you mean by
770 Ducktown?

A. Well, from the D. S. C. & I. plant.

Q. 12. Well, in the village of Ducktown, did you live north of the Ducktown plant?

A. Yes, sir.

Q. 13. What business did you follow while you were there?

A. I sold goods.

Q. 14. Did you follow sawmilling at any time through that country?

A. I did, in that county.

Q. 15. That is Polk County, Tennessee?

A. Yes, sir.

Q. 16. Did you in that section of the country, before 1906, there around Ducktown?

A. Yes, sir.

Q. 17. Did you travel in and out of the Ducktown Basin before 1906?

A. Yes, sir.

Q. 18. How long have you known that Ducktown section?

A. I have known it as far back as I can recollect.

Q. 19. I believe the Tennessee Copper Company began to operate about 1901, in the spring?

A. Yes, sir, yes.

Q. 20. Were you a member of what is known as the Mayfield Commission?

A. Yes, sir.

Q. 21. What did that commission take its name from?

A. I suppose just Mayfield appointing the people, and appointing them is all I know. He is the man that got it up.

Q. 22. Mayfield is the lawyer that lived at Cleveland?

A. Yes, sir.

Q. 23. When the Tennessee Copper Company was about to blow in its plant, in 1901, did you go out as a member of the commission arranged by Judge Mayfield, to look at the condition of vege-
771 tation and forestry, in that section.

A. Yes, sir.

Q. 24. What was the object of the Mayfield Commission, what instructions did you get when you went out?

A. Well, my understanding was, and the way we were ordered was to try to ascertain how long the smoke limit reached from the plant.

Q. 25. The plant of the Ducktown Copper Company?

A. Yes, sir.

Q. 26. Was that just before they blew it?

A. Yes, sir, they had a lot of roast heaps at fire, at that time, they had not commenced smelting any.

Q. 27. Who composed that Mayfield Commission?

A. Myself, T. C. Biggs, Bog Rauling, and N. T. Foust, together with Mr. Reese, he was along, that is kinder showing us the locations, and Mr. Renwick went, I believe, went one or two days with us.

Q. 28. That was Mr. S. M. Reese?

A. Yes, sir, Mr. S. M. Reese.

Q. 29. How many days were you engaged in that investigation?

A. I believe, as I remember, four days.

Q. 30. Did you have any other object in view, except to ascertain and report truthfully as to the extent of the damage or smoke affected zone, at that time?

A. No sir.

Q. 31. Did you go in and out of the Ducktown Basin at various points?

A. Yes, sir.

Q. 32. Did you travel completely around the Basin?

A. Yes, sir, we went all around it.

Q. 33. Where did you locate the outside of the smoke zone, the territory that was affected in anywise, by the roasting and smelting operations at that time, with respect to the outer edge of the
772 Ducktown Basin?

A. Well, we went around the Basin, that is, around the foot of the mountains on the north side of what is known as the D. S. C. & I. Company's plant.

Q. 34. Was that town to be on the inside of the Basin?

A. Yes, sir, that is inside the Basin, I mean in the Basin, and on the outside, so far as the Basin went, down between that and the mountain, there is a ledge of mountains, and we went to the edge of the mountain.

Q. 35. How far did you find the smoke zone to extend away from the plant?

A. Well, it had gone along out next to the foot of the mountains in some places, and I suppose from the plant some two miles, and possibly a little further in some places.

Q. 36. How far did it extend from the plant southward, towards the Georgia line?

A. From that plant?

Q. 37. From the Ducktown plant, that is before the other one was put into operation?

A. Well, I just do not know exactly how far it would be. There was a lot of smoke seen on top of the ridge just south of where the Tennessee Copper Company's plant is now, south of the river there, I suppose it might be something like two miles from there, I do not know whether it was two miles through there or not from the plant.

Q. 38. Two miles from the Ducktown Company's plant?

A. Yes, sir, I do not know whether it would be that or not.

Q. 39. Now, when the Tennessee Copper Company's plant was put into operation, what was the effect on that smoke zone, did it increase or decrease?

A. It increased.

Q. 40. Was that increase great or small?

A. It was pretty great.

773 Q. 41. Do you remember a blowing in of the tall stack of the Tennessee Copper Company's?

A. Yes, sir, but I do not know just when it was now.

Q. 42. And how high was the stack, the one they operated, from 1909 until they put up the tall stack,—put it in blast?

A I do not know.

Q. 43. Was it anything like as tall as the one they have used since?

A. Oh, no.

Q. 44. Well, when they put the tall stack into operation, did or not the smoke zone again increase, and if so, to what extent?

A. Well, it was considerably extended, it went away on then.

Q. 45. Do you remember about the time the two companies began to operate their sulphuric acid plants, I do not mean the years, but do you remember the circumstances? I mean, the building of those plants?

A. When it was?

Q. 46. Yes, give it in years if you can, but tell us first if they actually had any plants in operation, acid plants?

A. Well, yes.

Q. 47. Now, do you know about when they were placed in operation?

A. No, I could not tell you just exactly.

Q. 48. Since they have been put into operation, what has been the effect on vegetation and forestry and crops in the Ducktown section, and the sections of Georgia and Tennessee, adjacent to the Ducktown basin?

A. Well, so far as I have seen, it seems to not affect the crops to amount to anything, but while I lived there in the Basin, it was after they had the plant up, and I made good truck there, at Ducktown.

Q. 49. After these acid plants were put into operation, did

774 you plant an orchard?

A. I set out some fruit trees, yes, sir.

Q. 50. In recent years, have you been back to Ducktown and inspected those trees, which were then planted, those fruit trees?

A. Yes, sir, I was there this last season, this last summer.

Q. 51. What did you find?

A. I found some fine looking peach trees, and they had peaches on them.

Q. 52. Were they being affected by smoke or smelting operations that you could tell?

A. They did not look like they had been affected by anything.

Q. 53. What character of peaches were growing on them, what quality?

A. Mighty nice peaches, all through the Basin there, that is all through that town, there was a fine chance for peaches.

Q. 54. That was in what you call Hiawasse, or Ducktown post-office?

A. Yes, sir.

Q. 55. State whether or not there were peaches growing in various yards and gardens, near Ducktown?

A. How is that?

Q. 56. More than one person had peaches growing in Ducktown?

A. Yes, sir, plenty of them.

Q. 57. Did you inspect any of the gardens, of people in Ducktown?

A. Yes, sir.

Q. 58. What did you find as to those, and their condition last year?

775 A. Well, they were good, seemed to be.

Q. 59. What were the kind of vegetables that were being grown in them?

A. Well, they grow grain, corn, beans, cabbage, tomatoes and potatoes.

Q. 60. Such as people generally grow in a little village of that kind through the country?

A. Yes, sir.

Q. 61. Sir?

A. Yes, sir.

Q. 62. What quality?

A. Quality, what do you mean?

Q. 63. Quality, yes, were they good, bad, or indifferent or what?

A. They were good so far as I seen. My son-in-law lives up there, and I stayed up there two or three or four or five weeks, and they had fine stuff. I did not see the other gatherings out of their garden, or truck patches, but it looked nice and good.

Q. 64. Did you hold any official position in that county while you lived there?

A. Yes, sir.

Q. 65. What was it?

A. Well, I served as justice of the peace twenty-two years, and was chairman of the county court three years.

Q. 66. That is probate judge?

A. Yes, sir.

Q. 67. While you lived in that vicinity, did you become acquainted with the character of damage that was done by the smelting operations, when the fumes would be turned loose, and drift over on the gardens and trees? Do you know how they would look, and how it affected them?

A. Yes, sir.

776 Q. 68. Do you know that kind of damage when you see it?

A. Well, I have a pretty good idea about it.

Q. 69. Did you go down into the North Georgia section of the country, during the years 1912 and '13, to ascertain if that North Georgia territory that lies immediately south of the Ducktown Basin, was being affected by the smelting operations?

A. Yes, sir.

Q. 70. What did you find down through there, tell us in a general way?

A. Well, I did not find anything in there that I knew for sure had been affected with smoke. There were a few dead trees once in a while, but you find them to some extent everywhere you go. I saw no sign on the foliage or anything like that.

Q. 61. How many days did you spend down there in 1912?

A. Eight, I believe.

Q. 72. How many in 1913?

A. I do not remember just exactly.

Q. 73. Well, several days, or a few?

A. Well, it was not as much as two or three days or four, maybe the last time.

Q. 74. Were you provided with horses when you went down each trip?

A. The last time yes, they took horses out for us the first trip, yes, sir, we rode both times.

Q. 75. Were you a member of the party that camped on Jacks River, and pitched a camp there?

A. Close to the river, yes, sir.

Q. 76. Did you go from the Copper Company's plant, or Ducktown postoffice down there?

A. I went from the Ducktown postoffice.

Q. 77. In going down to this Jacks River section, and while you were down there, did you or not, pass back and forth through
777 the woods, and along through the fields, in that section of the country?

A. Yes, sir.

Q. 78. Did you make such an examination of that territory that lies adjacent to the Ducktown Basin, as would enable you to ascertain whether any substantial damage was being done there at that time, by the smelting of ores?

A. Yes, sir. I do not think there was any being done at that time. They had mightly fine fruit in there, up pretty close, in fact, I never saw a finer place hardly.

Q. 69. Did you or your party secure any apples or vegetables, or corn for your use, and for the use of your stock over on Jacks River?

A. Yes, sir.

Q. 70. Where did you draw your supplies from while your camp was pitched there?

A. Well, we took some of the stock from Ducktown over there, and we bought from the citizens there, apples and feed for the stock, and I was on one Mr. Allen's place, and bought a good deal of stuff from one of the Allens.

Q. 71. How far is the Jacks River section from Copperhill, the place where you pitched your camp?

Well, it is just guess work with me, I suppose it would be ten
en miles.
72. Did you go over the territory that lies between there and
hill, so as to enable you to tell if there was any damage being
y smoke?
Well, we went over it considerable.
73. That was your business?
Yes, sir, we travelled every day in and out of the locality,—in
rent locality.
Q. 74. Have you since that time visited any section of
East Tennessee, a further distance from the smelting opera-
tions than the North Georgia section, with a view of ascer-
g as to the death rate of timber?
Yes, sir.
75. What sections of Eastern Tennessee have you visited?
Up on the Cumberland Mountain, up Emory River, from Har-
and all around over that country.
76. Do you remember the counties?
Well, I have a note of several of them.
77. Where is your note?
Now, it is in the valise in the room there.
78. Suppose you get it 'Squire?

e witness goes to the other room for his memoranda.)

DRAKE: Note an exception for all of the evidence of this wit-
elating to the conditions around Ducktown, prior to 1906, as
irrelevant and incompetent.
79. 'Squire, can you tell us what counties of Tennessee you
n recently, with a view of ascertaining as to the death rate of
?
Well, I had a list of them, but I have lost sight of it now, in
way. I can tell you the territory, I can tell you some of the
es. We went up Emory River, from Harriman, quite a ways,
r seventy-five miles, and come back down, and went up there
train, and come back down afoot, looking at the timber, down
River. I forget what county that was in up there.
80. Do you know whether it was in Scott or Morgan County?
We were in Scott and Morgan too.
81. And Fentress?
A. And Fentress too, we were in seven or eight counties.
Q. 82. Cumberland County?
A. Cumberland County.
83. Do you know whether you were in Bledsoe, or not?
No, I do not know about Bledsoe.
84. Overton or Putnam?
We were in Putnam.
85. Well, when did you travel over that tier of counties?
Yes, sir, we travelled over it.
86. What did you find as to the timber death rate in those
es, embraced in those counties you have mentioned?

Mr. DRAKE: We except to that question, as being irrelevant and incompetent.

Exception overruled and appeal taken.

The WITNESS: Do you want me to answer?

Mr. MILLER: Yes.

A. In places, for instances, up Emory River, we went up there during the,—I had the name of the station in my mind just a minute ago, we went up to a little station, and walked back down, there were three tunnels in the road, and we came through them tunnels as we came back. That is a white pine country up there, to a great extent, and pretty good, looked like it had been pretty good timber, but it was nearly all dead. I have never been anywhere hardly that there was as much dead timber as up that river. I do not know why.

Q. 87. Did you go to Monterey while you were out?

A. Yes, sir, we stayed there two or three nights. I do not know what county that is in.

Q. 88. That is in Putnam County, Tennessee.

A. Well.

Q. 89. And what did you find as to the timber and death rate of it, in the Monterey section?

780 A. Lots of dead timber there.

Q. 90. How many days were you out on this trip, through Putnam and Overton Counties, Scott and Fentress Counties in that section?

A. We were four or five days all told, in there, I do not know just how long we spent. We stayed two nights at Monterey, and then we would go out in the day on the mountain sides, and on the mountains away from there.

Q. 91. What did you find to be the death rate of timber, in that section as compared with that down in North Georgia, in the years 1912 and '13?

A. Well, it was greater than it was in Georgia, except right close here to the Tennessee Copper Company's work there. Of course the smoke goes right over the river there, and kills nearly everything for a little piece, right close.

Q. 92. What do you mean by "right close", how far away from the Tennessee Company's plant?

A. Some close, oh, maybe a half mile to a mile.

Q. 93. Well, after you got as far as a half mile to a mile away from the Tennessee Company's plant, southward, what was the condition of the timber, as compared to hundreds of miles further away in Fentress, and Putnam and Scott counties?

A. Well, there was a heap more dead in timber over there than down near in Georgia, after we got away from right close to the plant.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 94. Mr. Parks, how many times have you been a witness for this company?

do not know.
5. Well, approximate it, about how many times?
Vell, I could not tell you.
Q. 96. How long have you been in their employ?
A. I made my first trip for them in,—May 1901.
Q. 97. Have you been working for them since then?
'rom time to time.
8. How many times have you made trips for them?
Vell, I could not tell you that.
9. Have you been a wit*ness* more than a dozen times for

Vell, that is for both companies, they both have suits in court, ot know which I would be summoned for, I do not know r it would be one or the other.
00. Are you any expert on timber, or diseases of timber?
Io, sir.
01. Are you an expert on bugs and insects and other things ect timber?
Io, sir, I could not say that I was.
02. Who sent you down into Fentress County, Tennessee, to the forests down there?
Vhy, I guess the D. S. C. & I. Company.
03. When was that?
'hat has not been so terribly long ago, it was not long,——
04. When?
could not tell you just the month it was, or the d'te it was, ack in the fore part of the summer.
05. Of this year? And you cannot remember where you ?
Vhere I went?
06. You cannot remember the counties you were in?
was a stranger to all of them, and I did not put them down. never been in those counties before.
07. Why did they send you to Fentress County, Tennessee?
never asked.
Q. 108. Who was with you?
A. Three or four or five fellows.
Q. 100. Who were they?
Ir. Sherman Reese.
01. Just name them?
I. T. Foust.
02. R. A. Shiflett?
Ir. Shiflett, and one Mr. Miller at Athens.
MILLER: J. A. Miller?
Yes, J. A. Miller, I do not know whether that is his initials or

03. Were you with the crowd that went over to Georgia last nat camping party?
'hat camping party, last year and the year before? I was e crowd the year before, I was not there last year.
04. You were not there in 1913?

A. I was not there, no, I do not believe I was there in 1913. I believe it was 1912. Well, I might have been. I did not camp over there at least.

Q. 105. Were not you with a party that went to J. Y. Allen's?

A. J. Y. Allen.

Q. 106. At Blue Ridge, where you got some feed and stuff, didn't you say you got some feed from a man down there named Allen?

A. Not at Blue Ridge.

Q. 107. Don't you remember that?

A. Not at Blue Ridge.

Q. 108. Anyway, he had some corn down there, didn't he use to live at Blue Ridge?

A. If he did, I did not know it. We went by a man by the name of Allen, who lived in what we called Hell's Hollow.

Q. 109. In Hells Hellow, when was it you were there?

A. That was two years ago, that was in,——

Q. 110. Now, to refresh you, Mr. Parks, was not that last year, and were not you a witness in the Shippin Brothers case
783 against these same people, and testified about Mr. J. Y. Allen's crop, and described it, and so forth?

A. Not last year.

Q. 111. In 1913?

A. No, sir.

Q. 112. In 1912, then, it was?

A. Well, that is what I said a while ago.

Q. 113. Well, I just wanted to know. I did not think you had stated positively which year; you went down in Fentress County and In Monterey, looking for dead timber?

A. Looking to see the condition the timber was in.

Q. 115. Well, you went over in North Georgia, you went looking to find if there was any dead timber, and you could not find much?

A. I was looking to see the conditions there.

Q. 116. You could not find much dead timber in North Georgia?

A. In some places.

Q. 117. It was not as bad down in Fentress County?

A. Not that we could see from the mountains.

Q. 118. You do not know what killed that timber around in Fentress County, you say?

A. No, sir.

Q. 119. And do you know what killed it off in the Ducktown section?

A. No, sir.

Q. 120. Do you know anything about the effect of smoke damage, and its effect on vegetation?

A. I think I know smoke.

Q. 121. Please describe the effect it would have on the leaves of the trees?

A. It turns them brown.

Q. 122. How long after it strikes them?

784 A. I cannot tell.

Q. 123. How soon?

A. Well, I have been going through the woods and seen lots of brown leaves. I do not know how long it had been brown before I got there.

Q. 124. You are not an expert enough to tell how long it takes smoke to affect it that way?

A. No, sir.

Q. 125. What affect will it have on the leaf of a tree, for instance?

A. What do you mean?

Q. 126. How long will it take it to kill the leaves?

A. I do not know sir, I cannot tell you that.

Q. 127. When, and what affect will it have with respect to making the leaves fall off.

A. It turns them brown and makes them fall off sometimes.

Q. 128. I will ask you if it does not have very much the same effect as a frost does?

A. Sometimes, I suppose.

Q. 129. Something like a frost.

A. Yes, sir.

Q. 130. It is easily to observe when the leaves have been damaged, is it?

A. I cannot tell them when it has been damaged, whether it was damaged by smoke or frost.

Q. 131. You cannot tell that?

A. No, sir.

Q. 132. You can tell it is one or the other?

A. Or it might be something else, anything that kills timber or leaves, will turn them brown.

Q. 133. Now, the time that you went up in North Georgia, did you observe any damage to the leaves on the trees?

785 A. I might have seen some.

Q. 134. Well, did you?

A. I don't know as I seen any on that trip that I recollect, but I have been there more than one trip.

Q. 135. I am speaking of that trip?

A. That trip?

Q. 136. Yes.

A. Well, I do not recollect. I may have seen some brown leaves, I do not think I did. I do not recollect any on that trip.

Q. 137. Well, how far did you go on that trip?

A. I went,——

Q. 138. And whereabouts?

A. I went by Pierceville, and took the road and went to the camp in about ten or twelve miles from there.

Q. 139. Where did you go from there?

A. Oh, out a day's ride from there, and out in some other section. We had a pilot.

Q. 140. You came back to the camp every night?

A. We came back to the camp every night, yes, sir.

Q. 141. Did you go over to Ellijay with them on that trip, or over towards Ellijay?

A. No, sir.

Q. 142. You were inspecting Mr. Vestal's timber?

A. Yes, sir, but we never went to Ellijay on that trip.

Q. 143. I did not mean Ellijay, but you were inspecting a Mr. Vestal's timber on that trip, and I asked you if you did not inspect Mr. Vestal's timber that lay down toward Ellijay, in Gilmer County, Georgia?

A. I do not know where his timber is, only what I was told, we had a pilot.

Q. 144. You were there to inspect it?

A. Yes, sir, we had a man who said this was about it, and I just took his word for it.

786 Q. 145. Who was the man that told you you were there to inspect that Vestal timber?

A. I was there to inspect?

Q. 146. Yes?

A. I had a pilot, I say, that told us when we got on his property.

Q. 147. Who was he?

A. We had two really, one named Higdon, and one named Watson.

Q. 148. Well, didn't you make two trips that year?

A. Not over there.

Q. 149. Well, further in that country, I mean over there into Georgia.

A. Oh, I might, I do not remember.

Q. 150. I will ask you if, at the time you were over there if there had not a big frost fallen, and did not a frost fall while you were over there?

A. Not enough to turn the leaves brown, there was a little frost on the fences and around camp.

Q. 151. The night you were up at Mountain Town, you were there I believe, didn't there a good frost come that night?

A. I was where?

Q. 152. At Mountain Town, over there in Georgia?

A. I do not remember, I don't remember.

Q. 153. You cannot remember?

A. No, I do not remember being in Mountain Town.

Q. 154. What time of year was it you were up there?

A. We were up there along in the,—I was out in that section two different times, and I went different places, I did not go back there the second time.

Q. 155. Were you in that crowd, a member of that same crowd, that claimed to the people over there that you were over there viewing out a railroad route for a new railroad?

A. I never heard any such talk as that.

787 Q. 156. Did you tell the people what you were there for, trying to get them to help you find the damage?

A. I think not.

Q. 157. I will ask you if in the Shippin case, you did not swear that you did not know much about smoke damage?

A. In what case?

Q. 158. The Shippin Brothers' case, against this Ducktown Company?

A. That I did not know much about smoke damage.

Q. 159. Much about smoke damage?

A. I may have sworn, like I swear now, I am no expert.

Q. 160. Did you swear what I asked you?

A. I do not recollect.

Q. 161. Did you swear in that case that you did not know smoke damage when you saw it?

A. I think not.

Q. 162. Do you know smoke damage when you see it?

A. I know what I think is smoke damage.

Q. 163. Can you tell it from frost damage?

A. Yes, when I see it—a dead tree. Frost hardly ever kills a tree, it don't kill a tree, but when I see a dead tree I know it is smoke damage.

Q. 164. You know when you see it damaged that it is frost damage or smoke damage, don't you know what I mean by this question?

A. I do not know where you are trying to reach to. I know frost will turn leaves brown, and the leaves will fall to the ground, and they will do the same with smoke.

Q. 165. I understand you, sir, you have to wait until you see the tree, see whether the tree dies, before you know it is smoke damage, that is all the way you can tell, that is what you mean?

A. Yes, sir, that is about all the difference, unless it is in the summer time, if it is summer then there has been no frost and when I see brown leaves, I know the smoke is around but if it is in
788 the fall, it is pretty hard to tell.

Q. 167. Didn't you make an affidavit in the original suit of the State of Georgia against these companies?

A. How did you ask that question?

(Question read).

A. I do not know nothing about what you mean by the original suit.

Q. 168. I mean the case in the supreme court of the United States, of this State of Georgia against these—against the Tennessee Copper Company, and the Ducktown Sulphur, Copper and Iron Company, Ltd., in which the State of Georgia sought to close them down in 1906 and '07, along about then, did not you make an affidavit?

A. I do not remember.

Q. 169. Is there any other G. C. Parks that lives in that section of the country?

A. None that I know of.

Q. 170. Did one live there at that time?

A. No, sir, not that I know of.

Q. 171. And if G. C. Parks did make an affidavit in that case, I will ask you *if* it would not be you, relative to that smoke damage.

A. I suppose it was.

Q. 172. You had been at that time working for that company as you have already said?

A. When?

Q. 173. In 1906?
A. Which company do you men?
Q. 174. You began in 1901, I believe?
A. Which company do you mean?
Q. 175. Either one or both?
A. Yes, I had been working for them.

Q. 176. Did not you make an affidavit in that case and
789 state there was practically no damage being done? And especially in the State of Georgia, by either one of these companies?

A. I do not recollect.
Q. 177. At that time?
A. I do not recollect.
Q. 178. You say you cannot answer that?
A. I said I did not recollect that I made that.
Q. 179. Your recollection is very bad, isn't it?
A. No, six or eight years, or ten, it might get so I could not remember.
Q. 180. It is bad in the last few months, you cannot remember where you went to over there in Tennessee?
A. I do not know, I do not know the names of the counties, I can tell you where I was.
Q. 181. I will ask you, if to the best of your recollection, you did not make an affidavit in that case?
A. I told you I did not recollect.
Q. 182. Didn't you make any report on that fellow Allen's corn, about how much he would make per acre.
A. I think not.
Q. 183. Did you swear how much it would make?
A. I do not recollect that I did.
Q. 184. Would the case of Shippin Brothers and Company, I am asking about, against the D. S. C. & I. Company, didn't you swear what you thought that corn would make?
A. I do not recollect that I did. He had good corn there, and we got corn to feed on, but I do not recollect that I swore anything like that, in fact, I did not go into his field to see his corn.
Q. 185. Did you see Mr. J. W. Withrow on that trip, down in Georgia?
A. J. W. Winthrow?
Q. 185. Yes, J. W. Withrow, up there about Mountain Town, you know where Mountain Town is, don't you?
790 A. No, sir.

Q. 187. You remember going to Ellijay and making a trip out north of there?
A. North of Ellijay?
Q. 188. Yes, went out north of Ellijay?
A. Yes, I reckon it was north.
Q. 189. On that trip, didn't you see a man named J. W. Withrow, and talk with him, and did he not try to point out to you, to your party, smoke damage?
A. J. W. Withrow.

Q. 190. In his orchard, or did anyone up there point out smoke damage to you in an orchard, to your party?

A. I do not remember if he did,—I do not recollect. There might have been somebody that done it.

Q. 191. Well, if you can state positively, please state whether anybody pointed out damage to you on that trip?

A. I cannot state positively that anyone did.

Q. 192. Did you talk to any citizens up there and try to ascertain if they had any damage to their crops and trees?

A. I guess I did, but I do not recollect who it was.

Q. 193. You cannot remember then, anything that occurred on that trip only this general way that you speak of?

A. I can recollect that.

Q. 194. Except that there was no dead trees up there?

A. How?

Q. 195. You can remember there were no dead trees up there?

A. I did not say there were no dead trees up there, I did not see a great many up there.

Q. 195. At A-1, do you know where that is in Georgia?

A. No, sir, I do not think I do.

Q. 197. I will ask you if you did not take dinner at A-1 with a man named Johnson?

A. A-1?

791 Q. 198. Don't you remember taking dinner there, your party, with a fellow named Johnson?

A. I remember taking dinner there, I do not remember his name.

Q. 199. Do you not remember his pointing out damage to your party, of smoke all around in the distance?

A. I do not think so. I remember of,—the one I am thinking of eating dinner with over there, he had a fine field of corn and fed the horses.

Q. 200. A good field of corn?

A. Yes, sir, we got corn from him and fed the horses. I do not remember his name, but he had a postoffice.

Q. 201. I believe you stated a while ago in answer to Mr. Miller that the damage across the Georgia state line, near to the Tennessee Copper Company, a few miles away, was very bad, and all the timber I believe you said, was killed, that is true, isn't it?

A. Not all of it, but a big majority of it was.

Q. 202. I will ask you if the hills facing the Copper plant in the state of Georgia, are not denuded of timber, of any size for miles back there?

A. Well, there is patches that there is some timber, and then there are places that there is none.

Q. 203. I will ask you, Mr. Parks, if the shape of the mountains and hills does not have a good deal to do with the effect the smoke will have on the timber?

A. Well, if the timber is down in a hole, and it had to go through the mountains to get to the timber, it would make some impression, but there is no big mountains right close there on that side.

Q. 204. Don't you know that a hill facing these plants, the effect

of the smoke is worse than it is in a hole, or back of the mountains, away from the plant?

A. Well, that is reasonable to suppose that. Also I never
792 saw a finer lot of timber than there is facing the Isabella plant. Right there facing it, on the side next to it.

Q. 205. Please answer my question. Isn't it under the conditions as I have stated, on the hills that are facing these plants, the trees are all gone, anywhere near them, and on the opposite side of the mountain from the plant, you will find timber?

A. I will not say they are all gone, but in places they are pretty near all gone. There *is* a tree standing right across from the Tennessee Copper Company's plant, when I was there, and I went over and inspected it. I do not know why it was not killed, but it was not killed.

Q. 206. I want you to answer that general question, Mr. Parks?

A. Well?

Q. 207. Will you state yes or no*t*, does the smoke affect the timber on the hills facing the copper plant, more than it does on the opposite side of the hills or mountains?

A. Yes, sir, I will answer that. It does more, but I do not think it kills everything on that side like you asked it before.

Q. 208. You stayed there in the little town of Ducktown postoffice, and last year, you saw peaches growing, I will ask you if there is not a hill or mountain in an air course between that and the Ducktown Copper Company?

A. A mighty small one. There is a ridge right close there.

Q. 209. Right back of the town isn't it?

A. How?

Q. 210. Right between the town and the plant—a great big hill.

A. The road goes right down the hollow and passes over it, it does not go over the hill, but then there is a hill there.

Q. 211. Is your son-in-law or son I believe you said, up there.
793 A. Son-in-law.

Q. Was he working for the copper company?

A. He was not working then for them. I do not know he may be now.

Q. 213. Pretty nearly everybody that lives in there, in and around Copper Hill and Ducktown and Isabella, work for those companies, do they not?

A. Well, a few of them do, and some do not.

Q. 214. I mean, is not every industry in there dependent on these copper companies for a living.

A. Well, practically so, yes.

Q. 215. Was this party that went to Fentress County, Tennessee with you, a part of the same crowd there were over there in Georgia with you?

A. Part of them might have been sir.

Q. 216. Were all of them, or just a part? How was that?

A. Just a part of them.

Q. 217. Was Mr. Reese and Hyatt, who were with you on that

inspection tour, around the plant, the same gentlemen who are here today as witnesses?

A. Do you mean in May 1901?

Q. 218. Yes, around the plant there inspecting this property?

A. Yes, sir, Mr. Hyatt did not go but one or two days, Mr. Reese went with us.

Redirect examination.

By Mr. W. B. MILLER, Esq.:

Q. 219. We could not very well show the conditions down there without calling the witnesses, that is the only way we could get that?

A. I think it is.

Q. 220. Now, you were asked about who is dependent on the copper companies for support; I will ask you whether or not practically that entire North Georgia section that is adjacent
794 to the Ducktown Basin is also dependent on the copper companies for a market for their timber?

A. Yes, sir.

Mr. DRAKE: I except to the question as being irrelevant, immaterial and incompetent.

Exception overruled and appeal taken.

Q. 221. State what these North Georgia people generally do with their crops, their garden and products and fruit, where do they sell it, market it usually?

A. Well, at Ducktown, so far as I know.

Mr. DRAKE: We except to the question as being irrelevant, immaterial and incompetent.

Exception overruled, and appeal taken.

Q. 222. Do they or not peddle it out over the country, over the Ducktown section?

A. Yes, sir, I have bought lots of it from them while I lived there.

Q. 223. What is the prevailing wind during the growing season Squire, in the Ducktown Basin, from what direction do the winds generally come?

A. In the summertime you mean?

Q. 224. Yes.

Mr. DRAKE: I except to the question as original evidence, and it should have been asked in chief, and not in rebuttal to anything that has been asked.

Exception overruled, and appeal taken.

A. Principally from the south.

Q. 225. Now, if it be blowing from the south by Isabella or Ducktown Company's plant, state whether or not that would drive the

smoke right up the hollow to the village of Ducktown, about which Mr. Drake asked you on cross examination?

A. It would.

Q. 226. And what would be the effect on gardens and fruit up in the village of Ducktown if there is any smoke of conse-
795 quence escaping from the plant?

A. It would have killed them the same as anybody's.

Q. 227. You do not know of any reason why it should have been left and the smoke travelled down into North Georgia and done damage?

A. No, sir.

Q. 228. What was that you said on cross examination about that pine body of timber, facing the smelter of the Ducktown Copper Company?

A. It was on Pack Mountain, two miles or two and a half miles from the Ducktown Copper Company's plant, right on the base of the mountain, up from the smelter.

Q. 229. Keeping the smelter stack in operation generally?

A. Yes, sir.

Q. 230. Is that on the inside of the Basin?

A. Yes, sir.

Q. 231. Now, what character of timber is that you saw?

A. Chestnut and poplar, awfully fine timber.

Q. 232. All of it fine timber?

A. Yes, sir.

Q. 233. Does it seem to be thrifty and healthy?

A. Yes, sir, as fine timber as I ever saw. I cannot understand why it has not been killed, but it has not.

Q. 236. Well, state whether or not in your voyages down through North Georgia, you found the crops in a growing and thrifty condition, and also the fruit, even after the frost had fallen?

A. Yes, sir.

Mr. DRAKE: We except to that question and answer as being original evidence, and should have been asked in chief, and *for* the further ground that it is a conclusion of the witness.

Exception overruled, and appeal taken.

Q. 237. Now, suppose that the smoke, the sulphur fumes
796 had been drifting down there in the season when the crops and orchards were maturing, and would these crops — existed in the healthy condition you found them?

A. I would think not, if there had been anything to affect it.

Mr. DRAKE: We except to that because he has not qualified as any expert, and also has not lain any grounds on which to base an opinion.

Exception overruled, and appeal taken.

Q. 238. You were asked if you knew why you were sent out into Fentress and Scott Counties sections, to look at the timber, not being a smoke expert, I will get you to state whether it requires a

smoke expert to know dead timber in this section of the country when you see it?

A. I think I can tell it, tell dead timber when I see it.

Q. 239. Any ordinary man can do that?

A. Yes, sir.

Q. 240. And you went over that and ascertained as to the relative death rate of timber.

A. Yes, sir, that is the way I understood it.

Q. 241. While you were down on the Jacks River section with headquarters at this camp, did or not your party, work out, riding from that camp in all direction-, while you were there?

A. Well, pretty much, yes.

Q. 242. You would go out in the forest and in the fields?

A. Yes, sir.

Q. 243. You have been asked in cross examination about your working for one or the other of the copper companies, did you ever work for either of them, in any respect, excepting to inspect some timber and report as to the damage?

A. No, sir.

Q. 244. When you were sent out on these inspection trips by either of the companies, were you ever advised as to color
797 your testimony, or make any other report, except a truthful and honest report as to the conditions as you found them?

A. No, sir.

Q. 245. Have you any interest in either of the companies?

A. No, sir.

Q. 246. They have paid you for your time?

A. Yes, sir.

Q. 247. And asked you to report truthfully as to the conditions?

A. Yes, sir.

Mr. DRAKE: We except because leading and suggestive and puts the answer in the mouth of the witness.

Exception overruled, and appeal taken.

Recross-examination.

By J. A. DRAKE, Esq.:

Q. 248. Who owned that fine body of timber you say is facing the plant, in about two miles of it?

A. I could not tell you.

Q. 249. Where is it?

A. Right up on the sides of the mountain, above the Isabella smelter.

Q. 250. Which way?

A. Northwest.

Q. 251. Now why is it, Mr. Parks, that you can remember so definitely everything for the other side, but cannot remember anything that we asked you, any detail, explain that?

A. If you will explain that to me that I have done that, maybe I can answer.

Q. 252. Answer my question if you can.
A. Well, I have answered it.

Further this deponent saith not.

Sworn to before me this 18th day of June A. D. 1914.

_____,
Clerk and Master.

798 The distance travelled by this witness from his home to the point of taking his deposition and returning was a total of 126 miles, 63 miles in each direction.

[End of Vol. I.]

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1914.

No. 1, Original.

THE STATE OF GEORGIA, COMPLAINANT,

vs.

THE TENNESSEE COPPER COMPANY AND THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED.

TESTIMONY ON MOTION TO ENTER A FINAL DECREE AGAINST THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED.

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No. 1, Original.

THE STATE OF GEORGIA
v.
TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED.

W. M. STEPP, the next witness called, being first duly sworn, upon examination, deposed:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. What is your age Mr. Stepp?
A. I am fifty-two years old.
Q. 2. Where do you live?
A. Epworth, Georgia.
Q. 3. How long have you lived there?
A. I have lived there seven years.
Q. 4. Were you raised in North Georgia?
A. Yes, sir, I was raised right there near in about eight miles.
Q. 5. What is your occupation?
A. Well, I have been in the lumber business and in the merchandising business mostly, for about eighteen years.
Q. 6. Carrying on your business there, in and around Epworth?
A. Yes, sir; well, my lumber business was up about eight or ten miles, about eight miles from there.
Q. 7. How far is Epworth from the Georgia line?
A. It is about three miles, I guess, about that.
Q. 8. Then, how far are you from the Tennessee Copper Company's furnace?
A. I expect as air course, straightway, I don't expect it is over three miles, it may be three and a half.
Q. 9. Then, how far are you from the Ducktown furnaces?
A. Well, from Epworth it is about seven or eight miles.
Q. 10. Do you remember Mr. Stepp, when the acid plants were installed in those furnaces?
A. Yes, sir.
Q. 11. About how long ago has that been?
A. Well, it has been—it has been six years ago, I reckon, somewhere along there.
Q. 12. Were you living in Epworth at that time?
A. Yes, sir.

Q. 13. During that time, what was the condition of vegetation around Epworth?

A. Why, it was—everything was scorched up pretty bad before that.

Q. 14. What was the cause of the vegetation being scorched?

A. Well, they claim it was the acid from the sulphur.

Q. 15. Did you see the smoke there in Epworth?

A. Yes, sir, some days there you could, and some you could not. It was not so bad.

Q. 16. In what direction is Epworth from the Tennessee furnace?

A. It is south.

Q. 17. The same course from the Ducktown Copper Company's furnace?

A. No, sir, it is not exactly the same course, it would be, the Ducktown furnace would be pretty near the same though.

Q. 18. What was the condition of the timber prior to the time the acid plants were started?

A. The timber was scorched up pretty bad before the acid plant was put in.

Q. 19. Did it kill any timber?

A. Yes, sir, it killed around Epworth there, a right smart.

Q. 20. What varieties of timber were principally killed?

A. I expect there was about a fourth of it.

Q. 21. What kinds, oak or what?

A. Yes, sir, oak.

Q. 22. Did it kill pine?

A. Yes, sir it killed pine.

801 Q. 23. Now, state Mr. Stepp, what effect the smoke has had on vegetation since the acid plant was established?

A. It has not done very much damage. It has done some damage. When they claimed there was something the matter with the plant, and they would let go the smoke, it happened once in a while.

Q. 24. What plant was that to which you refer?

A. That was the Tennessee Company.

Q. 25. You mean the Tennessee Company?

A. Yes, sir.

Q. 26. Which company is that?

A. The Tennessee Copper Company.

Q. 27. You refer to the one that is nearest to you?

A. Yes, sir.

Q. 28. Is there any difference in the size of those two furnaces?

A. I do not know, I have never been over to them, I have been over there, but I never paid much attention to the Isabella plant.

Q. 29. Is there any difference in the height of the stacks?

A. I suppose so, I think the Copper Hill Company's plant is the highest.

Q. 30. Is that the Tennessee Company?

A. Yes, sir.

Q. 31. Is or not that the company to which you refer when you

speak of the furnace being out of fix, when the smoke comes over on you?

A. Yes, sir, that is the furnace. The reason I can tell, I have been around the store most of the time, and I can tell myself when something happens, and the hands says always that there is something the matter with the plant and they turn it loose down there.

Q. 32. Now, state Mr. Stepp, whether or not Epworth is
802 in an elevated section of the country?

A. Yes, sir. In an elevated section.

Q. 33. Can you see the Tennessee Copper Company's plant?

A. Yes, sir, out on the ridge from Epworth a little piece, you can see their plant, right close to it.

Q. 34. Can you see the Ducktown Copper Company's plant in Epworth?

A. I do not think you can. I never have noticed it. That is you can see the plant, you can mighty near see it, if you get up on some — the ridges around there.

Q. 35. Now, Mr. Stepp, since the establishment of these acid plants, what is the condition of the young growth—of the acid plants of these two companies, what is the condition of the growth of the timber in North Georgia, particularly around Epworth?

A. It is looking pretty well now, it is coming out fine. I think it looks all through that section, it is looking well, it is green and nice.

Q. 36. Can you tell there is any damage being done to it at all?

A. Well, if there is, I think it is mighty little. I cannot tell, it has killed any, since the acid plants were built down there.

Q. 37. Did you notice whether or not there is any new growth on any of the old timber?

A. Yes, sir, the old timber looks a great deal better the old timber looks a lots better where it has come out a right smart.

Q. 38. During the last season, Mr. Stepp, did you notice any damage that had been done to vegetation, or timber at all?

A. No, sir, I did not notice any timber at all, and very little about the vegetation during last year, but there has been some done this spring, but left down there on the vegetation for the last two or three years, that I could see.

Q. 39. Did you make a garden last year?

803 A. Yes, sir.

Q. 40. Was there any damage to that garden last year?

A. No, if there is any, I do not know it.

Q. *40.* How was it in 1912, that was the year before last?

A. I do not think it was damaged to amount to anything. Of course there might have been a few plants hurt a little, but I never paid any attention to it if there was.

Q. 41. You say there has been some damage this year, when was that?

A. That was—there has been about three times it was bad. I think it was bad the 28th of May, the smoke come over there and scorched up the stuff some, and about last Monday a week ago, I

think it was, and then before that one time, before that, but I forget just exactly when that was.

Q. 42. Do you know what was the cause of that?

A. All I know, I was acquainted with lots of the men that worked there, they said that something got wrong, and they let the smoke out, they did not run it through the acid plant.

Q. 43. Over where do you mean?

A. At the plant.

Q. 44. Which plant?

A. At the Tennessee Copper Company's plant.

Q. 45. What was the condition of the apple crop in that section of the country, during the last year?

A. Well, they had a very good crop.

Q. 46. How was it the year before?

A. They had a very good crop.

Q. 47. How were the peaches?

A. There is no peaches in that country, hardly at all, there is a few trees through there, I do not think there is any peaches to amount to anything.

Q. 48. Are there corn fields in that section now?

A. Yes, sir, a good deal of corn raised through there.

804 Q. 49. Did the drouth have any affect on the crops through there this spring?

A. Yes, sir.

Q. 50. State whether or not it has been a very dry summer and spring.

A. Yes, sir, a very dry month, about six weeks I think.

Q. 51. Did you not have any rain at all?

A. No, no rain to amount to anything.

Q. 52. What affect did that have on vegetation?

A. It hurt that bad.

Q. 53. Have you noticed any special affect on the gardens this year from the smoke?

A. Yes, sir, I have some plants that have been bit this year, burnt up, the beans, and it bit the tomatoes and several things.

Q. 54. Was that the days you mentioned a while ago?

A. Yes, sir.

Q. 55. Two or three times?

A. Yes, sir.

Q. 56. One of those was last Monday week?

A. Yes, sir, I think that was the day.

Q. 57. Now, Mr. Stepp, you say that up at Epworth, it elevated?

A. Yes, sir.

Q. 58. And that you have seen the direction of the current there, the smoke current, and air currents?

A. Yes, sir. Yes, sir, it comes down when something gets wrong and settles in there.

Q. 59. State whether or not from your observation and what you know of the currents of the air, and the proximity of the Tennessee furnace, and the distance of the Ducktown furnace, and the drift of the currents of air from that furnace, if any of the

damages which you have described since the establishment of the acid plants, could have come from the Ducktown
805 furnace, or Isabella plant?

A. The Isabella furnace, you mean?

Q. 60. Yes.

A. No, I do not think so. I do not think it bothers us around Epworth at all. I noticed it comes from the other plant right up there, comes right over and settles down right up there, but I have never noticed any from the Isabella plant.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 61. You can see the Isabella or Ducktown Company's smoke from Epworth, can you not?

A. Yes, sir, you can see it from on top of them hills, just enough to notice it. I never did notice it that I can remember.

Q. 62. I will ask you if it is not due north from the Tennessee Company?

A. Well, it is about due north.

Q. 63. Which way is Epworth from the Tennessee Company?

A. It is west.

Q. 64. Epworth is west?

A. Yes.

Q. 65. To refresh you, I will ask you if on May 13th and 14th and again on May 28th, and last Monday, a week ago, which was June 8th, the smoke was not very bad all in that North Georgia section?

A. Well, there was about three days, that is has come over there pretty bad.

Q. 66. I will ask you whether or not you can see the smoke?

A. Yes, sir, you can see it.

Q. 67. Can you smell it?

A. Yes, sir.

Q. 68. How soon after it lights onto this vegetation, till the effects show up?

806 A. Well, it will show up pretty quick on them, right at once, no more than two or three hours. You go by in two or three hours and you will see where it has settled on some stuff.

Q. 69. What does it look like, Mr. Stepp, the effects of it?

A. Oh, just sort of looks like stuff scorched by fire, or something.

Q. 60. Like it had been scorched by fire?

A. Yes, sir, brown, turned brown.

Q. 61. Have you been over the North Georgia counties to observe the effects of the smoke?

A. No, I have not been over the counties, I have been around a right smart.

Q. 62. I will ask you if there is not a great deal of injured timber all in that North Georgia section, and has not it been injured from year to year, 1912, '13 and this year?

A. I do not think the timber has been injured since the acid plants were put in, to amount to anything. I do not believe it has. Of course it might have been, some think it does, I do not believe it has.

Q. 63. Until this year?

A. No, I do not think it has been injured this year.

Q. 64. Do you think that the scorching and injuring of the trees does not damage it?

A. It was so light, that I did not think it did. I never noticed any on the timber, it was mostly on the other stuff.

Q. 65. I will ask you if the effect on the trees does not show up worse in July and August than any other month of the year?

A. Well, it might do that, I could not say.

Q. 66. Well, how long have you been living over there?

A. I have been living over there seven years.

Q. 67. You observed that?

A. I have been living around there all my life, I was raised up there.

807 Q. 68. You have observed the effects enough to know the affects of the fumes, haven't you?

A. I do not know whether it was or not, I could not say.

Q. 69. Is not it worse on trees after the leaves are full grown and in the months of July and August, is not that your experience in observing it, that the effects are worse on leaves and timber in those months, than in any other month?

A. Yes, they might catch more of it, the leaves are bigger.

Q. 70. I am not asking that, I am asking if from your knowledge, that is true, that is the effect it has on it?

A. I just could not say about that.

Q. 71. You are not expert enough on it to answer that?

A. No, sir, I do not know whether it would or not.

Q. 72. Have you been over east of Blue Ridge, in the Flat creek country, and in there, it is just north of Blue Ridge?

A. No, sir, I have not been in that section.

Q. 73. I will ask you if just east from Blue Ridge, and leading from there right into Ducktown, and then on down into Gilmer County there is not a depression in the mountains, or gap, and if the prevailing winds are not from the northwest, and from the southeast, blowing to the northwest, is not that the way the winds generally blow?

A. I think so.

Q. 74. Has not that the effect of taking the smoke right down through and in the direction of that gap in the mountain, leading into Gilmer County, Georgia.

A. Yes, that might be, I could not say about that.

Q. 75. And does not the effect of this smoke reach out further from the plants in that direction than they do east or west from the plant?

A. Well, I could not say about that.

Q. 76. And does not the direction of the wind have a
808 great deal to do with the smoke, and the effect?

A. I think it does. It has something to do with the blowing of it around and scattering it.

Q. 77. And does not the atmospheric condition have a great deal to do with the damaging effect?

A. I do not know.

Q. 78. In other words, are not there times when the smoke seems to settle down more than it will at others?

A. Smoke never bothers us, only when something gets wrong with the acid plant, at all.

Q. 79. You only know that by hearsay?

A. I only know what I hear the men say, and I know they are telling me the truth.

Q. 80. You do not know that of your own knowledge?

A. No.

Q. 81. You only know that when the effect is bad, and the smoke comes down over Georgia there, and they tell you about it?

A. Yes, sir.

Q. 82. And when the wind is blowing from the north or northwest, is when you have trouble?

A. No, when the wind is coming from the north or east direction, is when it does. Before they put them acid plants up, it hurt all the timber.

Q. 83. You say you have been in Ducktown practically all your life?

A. Yes, sir.

Q. 84. In the timber business, or a merchant?

A. Yes, sir, timber business, I saw-milled eight years.

Q. 85. What I meant to get at, have you been a merchant more, or a timber man more?

A. Well, I have been a little more in the mercantile business, I am out of the lumber business.

Q. 86. Where were you in the mercantile business at?

A. At Copperhill, a good deal and up in the country
809 several years.

Q. 87. How long were you in Copperhill?

A. I was running a store there two years.

Q. 88. What years at Copperhill?

A. I was there last year, and four or five years ago I was there a year.

Q. 89. You were there last year with a store?

A. Yes, sir.

Q. 90. You never have worked for the copper companies any, have you.

A. No, sir.

Q. 91. Were you there prior to any of these operations of the copper companies, were you there in that section before any copper companies at all?

A. Yes, sir.

Q. 92. What were the conditions then as to timber?

A. Well, the timber was pretty good, that has been twenty-five or thirty years ago, there was not any sawmilling and any operations in Ducktown.

Q. 93. The hills were all green, and covered with leaves and timber?

A. There was some dead timber at that time. There was quite a streak of worms and they got on the hickory and chestnut and killed it a right smart.

Q. 94. Now, the hills are all bare and denuded of all trees?

A. No, we have a lot of scrub timber around there.

Q. 95. I am talking about in that immediate neighborhood?

A. Where abouts? Where I live?

Q. 95. Copperhill and Ducktown?

A. Right around Ducktown there is no timber, but you get up high, I live at Epworth, there is a good deal of timber.

Q. 97. I am talking about Ducktown, in the immediate neighborhood?

810 A. Yes.

Q. 98. There was no such damage there before then, as you have observed there since these plants have been there, and such as you have named up there this spring?

A. Before the plants were put up?

Q. 99. Yes, before the copper companies went into that country, you observed no such damage as you have described?

A. No, there was no such damage, only worms and things.

Q. 100. Is there or not more or less dead timber scattered through the woods, and does not it get worse going from the Georgia line, on south as far as ten or fifteen miles in through that gap that I spoke about?

A. I do not think it does. Of course, I am not sure. You mean down towards,——

Q. 101. Gilmer County?

A. Gilmer County, what gap are you talking about?

Q. 102. It is over here to the east, you know, this gap into the Flat Creek country.

A. The Flat Creek—well, I am not much acquainted with that section, I am not up there.

Q. 103. In your section I will ask you if the dead timber is not worse and more of it, the nearer you get to the plant, and the further you get from the plant does it not diminish as you go further away from the plant?

A. Yes, I think so.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 104. When was that dead timber killed, that you are speaking about?

A. It was killed before the plant was put up.

Q. 105. Has any of it been killed since then?

A. I do not think so. I do not think it has been strong
811 enough to kill timber around Epworth, over in my section. I have not noticed any killed to amount to anything.

Q. 106. Since the acid plants were installed?

A. No, sir, I have not.

Q. 107. Well, I will get you to explain about Epworth being west of the Tennessee Copper Company's plant, is that right?

A. I said it was along there.

Q. 108. Is it not due south?

Mr. DRAKE: I am willing to let him refer to the map, I have here, there is Isabella, there is the Tennessee plant and there is Epworth. (Indicating).

The WITNESS: Well, I was mistaken in that.

Q. 109. It is south then, is it?

A. Yes, sir, I was mistaken, I called it wrong.

Q. 110. In what direction do the currents of air there go through?

A. Well, they just scatter out through the country there, near that, of course, when the north wind blows, it throws it back up over that country more.

Q. 111. Do your winds principally come from the north or south?

A. Them that fetch the smoke?

Q. 112. I am not talking about that which fetches the smoke?

A. Well, it comes from the south, I think, the east, and then we have a north wind, and a south wind there, so far as that is concerned, sometimes they are one way and sometimes another.

Recross-examination.

By J. A. DRAKE, Esq.:

Q. 113. If the wind was from the north, and these plants were both running, and smoke comes out and comes to Epworth, or where you live, would come on over and through and mix
812 with the Tennessee Copper Company's smoke, and the time it would get through there to you, it would all be intermingled and together, wouldn't it?

A. It might mix up some, I never have noticed any damage done only when something went wrong down there at the plant, that is all I know about it.

Q. 114. When you say the plant, what plant do you mean?

A. The Tennessee Copper Company's plant.

Q. 115. You do not know that, only except as someone has told you about it, do you?

A. Well, that is all of course.

Q. 116. Well you swear positively that there was no trace of a tree—that there have been no trees killed in and around Epworth in the last two years, by smoke?

A. No, I would not do it, I would not swear positively, but I have not seen any of them killed by it.

Further this deponent saith not.

Sworn to and subscribed before me this 18th day of Juen, A. D. 1914.

____ ____,
Clerk and Master.

This distance travelled by this witness from his home to the place of taking depositions and returning, was a total of 228 miles, or 114 miles in each direction.

813 J. W. PELFREY, the next witness called, being first duly sworn, upon examination, deposed as follows:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. Mr. Pelfrey, how old are you?
A. Forty-five.
Q. 2. Where do you live?
A. I live in Fannin County, Georgia.
Q. 3. And how far from Copperhill, Tennessee, where the plant of the Tennessee Copper Company is located?
A. Why, an air course, it would be something like two miles and a half. I could not tell exactly.
Q. 4. What direction?
A. Southwest.
Q. 5. How long have you lived in that section?
A. I have lived there about twenty-two years.
Q. 6. What business are you engaged in?
A. I farm some, and a fruit grower, and run a merchandise business.
Q. 7. You knew that section of the country then, before the acid plants were built at Copperhill and Isabella?
A. Yes, sir.
Q. 8. What was the condition of vegetation in that section of the country before the acid plants were put into operation?
A. Well, we had some trouble with the smoke there, killing the timber to some extent and the vegetation.
Q. 9. What has been the conditions since the acid plants were put into operation?
A. Well, it has been a great deal better.
Q. 10. How many fruit trees, how many peach trees have you for instance, now in your orchard?
A. I have between fifty and sixty peach trees, I do not re-
814 member exactly.
Q. 11. How old are they?
A. About five to eight years old, I believe.
Q. 12. Are they bearing?
A. Yes, sir.
Q. 13. What quality of peaches do they yield?
A. They yield a good quality of peaches as a general thing.
Q. 14. Have you any apple trees?
A. Yes, sir.

Q. 15. How many apples trees have you?

A. I have fifteen hundred.

Q. 16. Do these apples trees yield fruit yet?

A. There is about three hundred that are bearing, or near that.

Q. 17. And what quality of fruit do they yield?

A. They yield a good quality of fruit except when bothered with draught, or something like that. We have a few droughts in there, that cut the size of the fruit off and cause the fruit to fall off a little early.

Q. 18. How far do you live from what is known as lot number twenty or the Howe mine?

A. My property lies adjoining the number twenty property on the west side.

Q. 19. From what does that Howe mine lot take its name? Why is it called the Howe mine lot?

A. It was a gentlemen by the name of Howe that owned the property, he bought the property, it was known as number twenty, that was the number of the lot he bought, before he bought the property.

Q. 20. It was known as lot number twenty in the allotment of lands in Georgia?

A. Yes, sir.

815 Q. 21. And the Howe mine is on that lot?

A. Yes, sir.

Q. 22. Was the timber cut off of that lot at any time?

A. Yes, sir.

Q. 23. And how many years was it cleaned off?

A. I do not remember exactly the years it has been, something like,—it must have been ten or twelve years since it was cut off.

Q. 24. Who had been the agent for this Howe property since that timber was cut off?

A. Old man Johnnie Quintrell, the father of J. H. Quintrell, he was there for some time and while the mines were running he was foreman or manager. He taken sick and died and Howe put John Henry Quintrell, as agent and manager.

Q. 25. Is that the John Henry Quintrell here as a witness?

A. Yes, sir.

Q. 26. What was done with the timber cut off of that lot?

A. They used it there at the mines for their fires, under the boilers, and for building timbers.

Q. 27. Has that Howe mine been in operation during the last few years?

A. No, sir, not anything.

Q. 28. Now, since that timber was cut off, I will get you to state whether or not, a new growth of timber has sprung up over that lot?

A. Yes, sir, there is a young growth over the property.

Q. 29. What is the condition as to healthfulness and strength, etcetera?

A. It looks like a healthy young growth of timber.

Q. 30. What distance is that from Copperhill, the copper plant of the Tennessee Copper Company?

816 A. I do not know, I could not say as to the air course, the distance as I would guess it would be about two miles, it is a half mile nearer than where I live.

Q. 31. It is between you and that section?

A. Yes, it lies east of my property.

Q. 32. Lies east of you?

A. Yes, it would make it about a half a mile nearer the Tennessee Copper Company's plant than my property.

Q. 33. It would make it more nearly south of the Tennessee Copper Company's plant than yours?

A. Yes, sir.

Q. 34. Yours is southwest, I believe?

A. Yes, sir.

Q. 35. What was the condition of the crops, and the orchards and the timber in that section last year, and the year before, 1912 and '13?

A. The conditions of crops were reasonably good We had a little drought during last year in the crops and also this year. Year before last the crops were reasonably good, the fruit crops were extra good.

Q. 36. When the smelting operations affect the forests and crops, do they also affect the fruit trees and destroy the peaches and apples?

A. Well, if they were to affect the forest sufficiently to kill it, it would affect the fruit trees I should think, to some extent.

Q. 37. They are just like other trees?

A. Yes, sir, about the same.

Q. 38. What has been the condition of the forests and fields, during the present year in your section, and east and west of you, that North Georgia country, upward to last Sunday or Monday a week ago?

817 A. It is, no,—there has not been any smoke on the leaves of the forest about there where I live. Now, at Frye Town, it is about a half mile of the smelters, there is a little sign of the smoke on the leaves of the timber down there, and also on the garden stuff and vegetation.

Q. 39. That is what direction?

A. North of me. It is right between where I live and the Tennessee Copper Company's plant.

Q 40. And you?

A. Yes, sir.

Q. 41. Now, if there was anything injured around there a week ago last Sunday or Monday or Tuesday, just tell us about it?

A. The smoke come over from the plant over there.

Q. 42. Which plant?

A. Supposed to be from the Tennessee Copper Company's plant.

Mr. Drake: We except to the answer on account of its being indefinite and a conclusion, and hearsay.

Objection overruled, and appeal prayed and granted.

Q. 43. Did you see the direction from which it was drifting?

A. I never paid any attention to it, to the way it was drifting; I seen the smoke there, but never paid any attention to the direction it came from.

Q. 44. How much nearer are you to the plant of the Tennessee Copper Company than to the other plant?

A. I could not say exactly, I do not know the exact distance, but just to the best of my judgment, it would be two miles and a half.

Q. 45. Now this smoke, that came there at this particualr time, what effect did it have on vegetation and timber?

A. It bit the leaves of the beans, garden beans and beat
818 plants, bit them and turned them yellow.

Q. 46. Over what period of time was that smoke drifting through that section, through that country?

A. I never paid any attention to the exact time, I do not think it was more than a couple of hours though.

Q. 47. Well, did it do wholesale damage, or was the damage comparatively slight, tell us about that?

A. It was slight damage, only damaged garden beans, and small plants like these plants, and beat plants and tomatoes.

Q. 48. Did it kill any timber of consequence?

A. No, I never saw any killed, just saw a little signs of some yellow leaves on bushes here and there.

Mr. MILLER: That is all.

The WITNESS: This was over there at Frye Town, in about a half a mile or three quarters of the plant. This was not at my plant.

Q. 49. It did not effect it down at your place?

A. No, sir, not any at all.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 50. How far do you live from the Mobile mine, in Georgia? Do you know a mine named that?

A. Yes, sir. I do not know exactly the distance, we called it a mile. Out there we call it a mile.

Q. 51. How far and in what direction did you live from mine number two?

A. I lived nearly a west direction.

Q. 52. About how far?

A. My property joins that property on the west, the lots are supposed to be a half mile square, and the mine where they
819 developed it is principally on the east side of number twenty property.

Q. 53. How far do you live from Mountain View Church, and which way?

A. Mountain View Church is on the same lot of land that I live on. It is something like between a fourth and an eighth of a mile.

Q. 54. I will ask you if there is not a series of hills between you and this plant?

A. I live,—what is called the dividing ridge, and it runs north straight towards the Tennessee Copper Company, and there is a small hill,—there are small hills up and down on that ridge.

Q. 55. Is there any hills between you and the Ducktown Copper Company?

A. Yes, sir.

Q. 56. I will ask you if you know anything about the prevailing winds in that section?

A. You mean do I know the direction the winds blow?

Q. 57. Yes, generally speaking.

A. Well, we generally have winds there from the north-west and from the south-east.

Q. 58. When the wind is blowing from the northwest, it blows smoke several miles east of you, would it not, down to Flat Creek Valley, towards Gilmer County,—look at this map. (Handing witness map.) You live over there close to Mountain View Church. Here is the Tennessee plant and here is the Ducktown plant at Isabella. Now, if the winds blow from the north-west,—that is north, and this is east (indicating). From the northwest, the prevailing winds are through this section and valley right in here, and blowing from this way, of course drives the smoke that way (indicating).

A. Yes, sir.

820 Q. 59. Then, how many miles east of you, would the smoke and fumes be driven, generally speaking?

A. They would be going from me, I could not tell you how many miles, they would dodge from this plant here, and gradually go further all the time.

Q. 60. I am speaking about here, from over there to here, about how many miles east they would pass you by, from that jointer to the nearest point would be right along here, there is the Tennessee Copper Company's plant, you are two and one half miles from there, and it would be about three and a half or four miles, wouldn't it, that the bulk of the smoke would pass?

A. That depends on how far it would be from the smelter.

Q. 61. I am talking about from Isabella plant there. It would miss you and go still further than from the Tennessee Company?

A. Yes, sir, it would send it further from me than it would from the Tennessee Company, of course.

Q. 62. Have you been through and made an inspection of the Flat Creek country east of Blue Ridge and through that district?

A. No, sir.

Q. 63. You have not made any investigation?

A. No, sir.

Q. 64. You do not know what the conditions over there are now?

A. No, sir, I have not made any inspection.

Q. 65. I will ask you if every time there is anything wrong with those plants, and the winds are in that direction, if the smoke does not get even over into your country, through and over those hills onto you?

A. We do not have any drifts of wind from their plant, to
921 and the smoke directly on us. I think from where I live, that I know about—there is no drift there. The smoke generally heats back on my place, and goes up in some other direction. There are changes of air.

Redirect examination.

By W. B. Wallace, Esq.:

Q. 66. Do you know whether there is a chain of hills that extends completely along down between the Ducktown Company's plant at Isabella and the Tennessee state line?

A. You mean a chain of hills running from the Tennessee and Georgia state line?

Q. 67. Are chain of hills between the Georgia state line before you reach Isabella?

A. Yes, sir, after you cross the river.

Q. 68. Across the Ocoee River River, you are going towards Isabella, there is a chain of hills through there?

A. Yes, sir.

Q. 69. State whether or not those chain of hills is a good deal higher than the stack of the Ducktown Copper Company?

A. Of course a portion of that is, there might be a few somewhere there that would not be higher, but not that I know of.

Q. 70. That gap is the gap that Potato Creek runs down from Isabella?

A. Yes, sir.

Q. 71. That is the biggest gap in that section?

A. Yes, sir.

Q. 72. And it runs down into the Ocoee River, continually southeast from where you are?

—, ——.

922 Recross-examination.

By J. A. Dixon, Esq.:

Q. 73. Don't you know that the Isabella plant is on higher ground than the Georgia State line, and the country between drops down that way, to the river?

A. Yes, sir, that is owing to what part of the Georgia State line it is. Now, there is on that ridge that I spoke of, that runs from my property to the Tennessee Copper Company's plant, a high place that you can look up towards the Isabella plant, you cannot see through that place.

Q. 74. But, looking from the southeast from this plant into the state of Georgia, I will ask you if there is not a depression and the valley opens up down toward Georgia, and the Flat Creek Valley?

A. I do not know anything about the Flat Creek Valley.

Q. 75. That is east of Blue Ridge, that country back and that I am showing you on that map located down southeast from the Isabella plant, does not the country gradually drift down hill, as

in other words, is not the Isabella plant on higher ground than the Tennessee plant?

A. Probably it is on higher ground, the Tennessee plant is down close to the river, down there where the Georgia state line crosses the river, but when you get out on either side, the line rises on higher ground.

Mr. DRAKE: That is all I care to ask.

Further this deponent saith not.

Sworn to before me, this 18th day of June, A. D., 1914.

____ ____,
Clerk & Master.

The distance travelled by this witness from his home to point of giving his deposition and return, is 246 miles, 123 miles in
823 each direction.

J. C. QUINTRELL, the next witness, being first duly sworn, upon examination, deposed as follows:

Direct examination.

By *Mr.* W. B. MILLER, Esq.:

Q. 1. What is your age?

A. Forty-five.

Q. 2. Where do you reside?

A. In Fannin County, Georgia.

Q. 3. Were you raised in Fannin County, Georgia?

A. Yes, sir, my father moved to Fannin County when I was seven years old, six or seven.

Q. 4. How far did you- father live from the Tennessee Copper Company's plant?

A. About two miles, something like about two miles.

Q. 5. In what direction?

A. South, prior to the establishment of those acid plants. It was very near all killed on the farm.

Q. 6. When was it killed?

A. It was killed from the beginning of ninety-two I guess.

Q. 7. (Interrupting:) Did any new growth come up on the place prior to the establishment of these acid plants?

A. No, sir, not to amount to anything at all. It would start up there, start up and be killed down each year.

Q. 8. Was it barren of timber?

A. Yes, sir, most all of the old forest timber was killed.

Q. 9. What kind of timber grew on it?

A. Well, general forest timber, oak, popular, pine, white pine, chestnut.

824 Q. 10. Has all of that timber gone down?

A. Very near all.

Q. 11. What is the condition of it now?

A. Why it has a very nice young growth of timber coming on it now, seems to be growing.

Q. 12. How long has that young timber been growing?

A. Four or five years, something along like that.

Q. 13. Has it been growing ever since the acid plants were put in?

A. Yes, sir.

Q. 14. What is the character of that young timber, what are the varieties?

A. It is different kind, white oak, principally, more white oak than any other kind of timber on it now, the young growth.

Q. 15. What is the size of the young growth?

A. From two inches on up, different sizes.

Q. 16. How large?

A. Probably three and four inches, where you reach the best places.

Q. 17. Does it appear to be thrifty?

A. Yes, sir, very well. It looks well.

Q. 18. How does it compare with young timber elsewhere, miles away from this place?

A. I could not tell much difference in it.

Q. 19. You do not live now on your father's place?

A. No, I live three miles and a half from the old home place.

Q. 20. Where do you live?

A. I live at Epworth.

Q. 21. What do you do?

A. Saw milling. I have been selling goods and saw milling for the last three years.

825 Q. 22. Is that young timber on your father's farm, characteristic of the growth of young timber in the country?

A. It is better than it is right close to the plant, but it is something,—better as you get away from the plant a short distance.

Q. 23. Now, in regard to Epworth, was there any damage to the timber or vegetation around Epworth last year?

A. A little.

Q. 24. Did you raise a garden last year?

A. Yes, sir.

Q. 25. Did it do any damage to the garden?

A. No, sir, I do not consider it any?

Q. 26. Did you notice any damage to the gardens of anybody around Epworth, last year?

A. No, I do not know that it did. I wasn't in very many gardens, I was away from home the larger part of the time, in the meantime.

Q. 27. Did you have a good fruit crop out in that section of Georgia last year?

A. Yes, sir, a good fruit crop in our section.

Q. 28. Was there any damage to your corn last year?

A. Not that I knew of, no, not than I seen.

Q. 29. Did you notice any damage to any timber in that section?

A. No, sir, I did not notice any at the time, last year.

Q. 30. How was it in 1912?

A. Well, I never noticed much damage in 1912.

Q. 31. Have you noticed much damage since the establishment of these acid plants?

A. I know some little time now and then, you can see a little sign on the ends of the leaves. You would see a little sign on the end of the leaves, and young crops, but I have not seen any
826 timber that I thought was killed by the smoke at all.

Q. 32. How was it before the establishment of these acid plants?

A. Well, there was a lot of timber killed through that country there.

Q. 33. All around through Epworth and that section?

A. Yes, sir.

Q. 34. Was there any vegetation injured by the fumes?

A. Yes, sir, it was injured a right smart.

Q. 35. Can you see both the Tennessee furnace and the Ducktown furnace from your place?

A. Not from my home. I can see it by going just a very short distance from my home place. I do very frequently go up and look at it, and notice the way the drafts are coming.

Q. 36. Have you noticed the smoke coming from the furnace?

A. Yes, sir, I have noticed that a great many times.

Q. 37. State whether or not in your judgment, any of the *blithe* damage you have mentioned since the establishment of the acid plants, could possibly have come from the Isabella furnace?

Mr. DRAKE: We except to the question and answer to be given, because it is a conclusion of the witness, without any facts to base it on.

Objection overruled, appeal prayed and granted.

A. Well, I could not say positively as to where the smoke come from, all the time. I have watched the smoke come from over, when it would come there, from the Tennessee Copper Copany, into our section, but it comes there sometimes when I have not been able to be on the hills where I could see it.

827 Q. 38. I am not talking about the smoke. I said, state whether or not in your opinion, any of the damage could have resulted from the smoke from the Isabella furnace?

A. No, sir, I would not consider the Isabella furnaces damages us at all in that section.

Mr. DRAKE: We except to the answer, because he gives a conclusion without any facts on which to base it.

Exception overruled, appeal prayed and granted.

Q. 39. State how much further the Ducktown furnace is from you than the Tennessee furnace?

A. Something like two and a half miles, I expect.

Q. 40. Are there any ridges intervening between the Ducktown furnace and your place?

A. Yes, sir, it is ridgy country there.

Q. 41. Are there any ridges intervening between the Ducktown Company's furnace and the Tennessee Company's furnace?
A. Yes, sir.
Q. 42. Are they pretty high ridges?
A. Yes, sir, right smart little ridges.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 43. Is there any timber whatever between the Tennessee's plant and the Ducktown plant on those ridges?
A. Not very much. Not any large timber, there is some young growth.
Q. 44. Is there a single bush or tree on those hills?
A. Yes, sir.
Q. 45. On top of the hills I am speaking of?
A. I would not say positively on the very top.
Q. 46. Or anything else to obstruct the smoke from coming over into,——
828 A. No, sir, I do not know as there would be any timber to stop it.
Q. 47. You were asked about last year's smoke coming over there? I will ask you if you have observed any smoke damage in that section? In your neighborhood this year?
A. No, I have not any that has been damaged this year.
Q. 48. Have you seen any beans or gardens that were damaged?
A. I have seen some. Seen some on my Irish potatoes, maybe a few hills of beans, all I have seen.
Q. 49. I will ask you on May 13th and 14th, and May 28th, and June 8th, the smoke was not so bad in your section that you could see it and smell it, and observe the effects of it on the vegetation and fruit?
A. On the 8th of June I was not in that section of the country. I cannot say. I was not in that section at all. The other dates you mention, I would not be positive but what there was some smoke in there some time during the month of May, I think.
Q. 50. It is a substance that you can smell and see?
A. Yes, sir, sometimes you can and there are times you cannot see it.
Q. 51. And sometimes you can see it all right?
A. Yes, sometimes you can see it.
Q. 52. Do you know about the prevailing winds in that section, which way they go?
A. No, I would not know.
Q. 53. Generally speaking?
A. No, I have never paid much attention to that.
Q. 54. You know the shape of the hills in that country, which way the valleys are the longest, and which way they are the narrowest?
829 A. Well, there is a valley,—The Ducktown Sulphur & Copper Company, or the Tennessee Copper Company? The

Tennessee Copper Company's plant is on the river, and the other is back on more of the mountain country a little further.

Q. 55. What I mean, Mr. Quintrell, is this, is not that Basin, does not that Basin run southeast and northwest, and is it not about twenty to thirty miles in one direction, and only about eight or ten miles from east to west across it, between two high mountains?

A. It is something like ten or twelve miles, I would say, something like maybe fifteen, I would not say as to that; and of course the other way, I would not say, but it is longer that way than it is the other way.

Redirect examination.

By J. A. FOWLER:

Q. 56. Mr. Quintrell, what kind of a season has this been in North Georgia?

A. It has been dry.

Q. 57. Would that have any effect on the potatoes?

A. Yes, sir.

Q. 58. On vegetation in general?

A. It would have a bad effect on them, yes, sir.

Q. 59. You state, Mr. Quintrell, there is not much timber near these two furnaces?

A. No, sir, not much timber.

Q. 60. What kind of growth of young timber is there between the Ducktown furnace and the Tennessee furnace, what kind?

A. Black oak, and white oak.

Q. 61. Is there very much of it?

A. A right smart little bit.

Q. 62. Does it appear to be thrifty?

830 A. It does, and not long ago, a day or two ago, looked better than it has been looking for years back.

Q. 63. State whether or not sage grass, or other kinds of grass grows through that section, that barren section?

A. That is between the two plants?

Q. 64. Yes.

A. Yes, sage grass grows there.

Q. 65. Is or not that burnt off every year, about?

A. Yes, sir.

Q. 66. What effect would that have on the growth of that other vegetation?

A. That would be owing to the season of the year, it could be burnt off in the season when it would have a bad effect on the young growth.

Q. 67. Anyway, it is burnt off?

A. Yes, sir.

Q. 68. And this young timber is coming up, notwithstanding that?

A. Yes, sir.

Q. 69. Do they have gardens right around the furnace?

A. I could not say right at the furnace, but they have them close around the furnace, in a quarter of a mile or something like that.

Mr. MILLER: That is all.
Mr. DRAKE: That is all.

Further this deponent saith not.

Sworn to and subscribed before me this — day of —— A. D., 1914.

——— ———,
Clerk and Master.

The distance travelled by this witness was 246 miles, 123 miles in each direction, to and from his home.

831 SHERMAN REESE, the next witness called for the defendant herein, being first duly sworn, upon examination, deposed:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. Mr. Reese, how old are you?
A. Forty-nine years old.
Q. 2. How long have you lived in what is known as Ducktown Basin, in Polk County, Tennessee?
A. All my life.
Q. 3. What was the condition of that Basin at the time the company of which Captain Raught was the manager, known as the Consolidated Company ceased operations?
A. You mean what was the condition of the timber?
Q. 4. Yes.
A. Well, all the virgin timber had been cut off, practically all of it, had been cut off furing the operation of the mine.
Q. 5. When the Ducktown Company began to operate in 1901, I understand they first began the open heap roasting?
A. Yes, sir.
Q. 6. How long did that continue?
A. About ten years.
Q. 7. At the time they ceased open roasting, was there or not a stock of roasted ore ready to be used in the smelter?
A. Yes, sir.
Q. 8. How long did that last?
A. Practically all that year. That was in 1902, I think. They took up all that year to smelt the roasted ore.
Q. 9. How long did the Tennessee Company continue to use the open roasting?
A. They were in operation in 1901, I think. I think they changed the open roasting in 1904.
832 Q. 10. Are you a member of the Mayfield Commission sent out in the spring of 1901, just before the Tennessee Copper Company went into blast?
A. Yes, sir.
Q. 11. What was the object of the Mayfield Commission?
A. To investigate the extent of the smoke damage at that time.

Q. 12. To ascertain the extent of the territory affected by smoke?
A. Yes, sir.
Q. 13. How many days was the body of commissioners out on that trip?
A. Four days.
Q. 14. State whether or not you rode in and out of the Basin, at various points, with a view of locating that zone?
A. Yes, sir.
Q. 15. Where did you locate that smoke, with respect to the inside, or foot hills of the Ducktown Basin?
A. It was in the Ducktown Basin, all around, except it went in behind what is now Amburn Mountain, but practically went inside the basin.
Q. 15. What distance would you say, taking the Ducktown or Isabella plant, at the center, what distance in the various directions did that effect the zone extent, at that time, after ten years' continuous operation by the Ducktown Company?
A. The roast plants, and taking the ridges around it?
Q. 17. No, take the Ducktown plant?

Mr. DRAKE: We except to the question, for the reason it is incompetent and not related to the issues.
Exception overruled and appeal prayed and granted.

A. From one to two miles.
Q. 18. You would say, taking the plant as a necleus,
833 the zone extended from one to two miles on all sides?
A. Yes, sir.
Q. 19. Could you or not, you and your fellow members composing that party, readily tell the extent of that zone?
A. We could.
Q. 20. How could you tell?
A. Well, we could tell by the effect on the timber, on the inside and how far it reached out, and the leaves of the timber were in full foliage, at that season of the year, and you could very readily tell how far the smoke went out.
Q. 21. Was it in full foliage at that date?
A. Yes, sir.
Q. 32. Now, after the Tennessee Copper Company went into blasts in the spring of 1901, how was that zone affected?
A. Well, it broadened in every way possible.

Mr. DRAKE: We except to that question for the reason it is irrelevant and incompetent, and is not related to the issues.
Objection overruled, appeal prayed and granted.

Q. 23. Do you remember when the Tennessee Copper Company first began about what heighth its stack was when it first began to smelt?
A. Yes, sir.
Q. 24. About how high?
A. I would have to approximate that, I guess 150 feet.
Q. 25. What is the heighth of the present stack?

A. 325 feet.
Q. 26. When was the present stack put into blast?
A. In 1906.
Q. 27. What is the relative size of the present stack of the Tennessee Copper Company, as compared with that of the Ducktown Copper Company, I mean in diameter?
834 A. It is much larger.
Q. 28. State the extent of the operations of the two companies, Mr. Reese, how do they compare in size and volume?
A. Well, I think that the Tennessee Copper Company is four or five times larger than the Ducktown Copper Company.

Mr. DRAKE: We except to the answer as being a conclusion without any facts on which to base it.
Exception overruled, and appeal prayed and granted.

Q. 29. Let us see what you know about the facts, have you been to the Tennessee Copper Company's plant often?
A. Not very often. I have been in the plant though.
Q. 30. You have been in there more than once?
A. Yes, sir.
Q. 31. You have been in recently?
A. Not very recently, not for the last two or three years.
Q. 32. Have you been to the Ducktown Company's plant often?
A. Yes, sir.
Q. 33. How many furnaces have they?
A. Two, not but one in operation now, they have closed down one, but have only two furnaces.
Q. 34. They have two furnaces and one in full blast?
A. Yes, sir, they hardly ever run but one.
Q. 35. During the growing season, do they ever run but one?
A. No, sir.
Q. 36. How many furnaces does the Tennessee Copper Company operate?
A. Seven. They have seven, I understand; but I understand they run from five to six.

Mr. DRAKE: We except to that because it is hearsay.
835 Exception overruled, and appeal prayed and granted.

Q. 37. Which of them consumes the greater quantity of ore?
A. The Tennessee Copper Company.

Mr. DRAKE: We except to that for the same reason as heretofore stated, that it is a conclusion without any facts stated on which to base it.
Exception overruled, and appeal prayed and granted.

Q. 38. State whether or not the Tennessee Copper Company operated continually?
A. They do.
Q. 39. Which employs the greater number of hands?
A. The Tennessee Copper Company.

Q. 40. Do you remember when the acid plant of the Ducktown Company was installed?

A. Yes, sir.

Q. 41. When was it?

A. 1909.

Q. 42. Was it June of that year?

A. 1909, yes, sir.

Q. 43. Has it been operated continuously since?

A. Yes, sir.

Q. 44. When was the acid plant of the Tennessee Copper Company installed?

A. 1908.

Q. 45. Has it been operated much of the time since?

A. Well, I suppose they have had some break downs, I do not know just how long the duration is, they are out of commission, they have had some few break downs, I think.

Q. 46. When that plant of the Tennessee Copper Company gets out of commission, and they have a break down, what is the result?

836 A. You can see the result on the vegetation.

Q. 47. When the tall stack was put into operation in 1906, did the smoke zone increase or decrease?

A. It increased.

Q. 48. Materially?

A. Yes, sir.

Q. 49. Was that increase one of two hundred yards, or a mile or two miles, or what?

A. Well, it went two miles further away.

Q. 50. I will get you to state whether there is a chain of hills that are higher than the stack of the Ducktown Copper Company, that intervene the Ducktown's plant, and the Georgia State line?

A. There is, yes, sir.

Q. 51. It has been maintained by inference in the cross-examination of some of the Ducktown Company's witnesses, today, that fumes have been escaping from its plant, and drifting in a southeasterly direction over the Georgia territory; I will get you to state whether or not you have been over that southeasterly section lately?

A. I have, a few days ago, last week.

Q. 52. State whether or not that inference or insistance has been founded on facts, and if not, tell just what you know about that section southeast of the Ducktown Copper Company's plant?

A. And the conditions of that country?

Q. 53. Yes, how they have been in the last two or three years?

A. Well, they have been very much improved since the two acid plants have been erected, a great deal more than they were before or after that high stack was put up.

Q. 54. Was that territory out in southeast Georgia effected at all until the Tennessee Copper Company began?

837 A. No, sir, not at all; in fact, I do not think it was affected in Georgia at all.

Q. 55. Was it materially affected out through there until the small stack was put into blast?

A. Well, after the Tennessee Copper Company went into operation, I think the smoke perhaps reached into Georgia.

Mr. DRAKE: We except to the question and answer above, for the reason that they are immaterial and irrelevant.

Exception overruled, and appeal prayed and granted.

Q. 56. After the tall stack was put into operation, was that section affected extensively?

A. It went further, quite a ways further.

Q. 57. And after the two acid plants were put in, you say conditions were materially—Has the southeastern territory been effected Mr. Reese since the acid plants have been put into operation?

A. Well, they have not been effected much, but right around by the Tennessee Copper Company, and Copper Hill, last week and week before last.

Q. 58. The eighth of June?

A. A week ago, or something like that. Last Monday a week ago, or something like that, the smoke was down there in that territory, and it bit the gardens and some shade trees, and some little bit of signs as far as Epworth, due south of the Tennessee Copper Company's works.

Q. 59. Epworth, I believe is about two miles from the Copper Company?

A. Two miles.

Q. 60. Where does that smoke come from, which plant was making it?

A. I went close to the North Carolina, Tennessee and Georgia line, where the North Carolina line corners with Georgia, Professor Bane and myself were taking the color photographs and the
838 smoke,—and the smoke was so very thick, we turned our course and intended to go into Georgia, but we could not take any pictures.

Q. 61. I am asking what plant that was coming from?

A. The Tennessee Copper Company.

Mr. DRAKE: I except to the answer because it gives a conclusion and speculative.

Q. 62. Did you or not see smoke ascending from the top of that stack, and drifting in the direction of Georgia?

A. I did.

Mr. DRAKE: I object to that, because the question is leading and suggestive of the answer.

Objection overruled, appeal prayed and granted.

A. I can tell about how that was on that day, if you want me to, and just what I saw in regard to the smoke.

Q. 83. Just tell what you observed, and the conditions at the Tennessee Copper Company's plant, and where the smoke was going to from there?

A. Well, as I said, you could see sometimes, some over there on the timber, and sometimes on the garden, as far as Epworth, and we turned west, to the Mobile mine, number twenty, and there was not any smoke at all.

Q. 84. Lot number twenty?

A. Yes, sir, and number twenty *m*ine. Then, we did not see any sign of smoke until we run Rogers Ferry, on the Ocoee River, and, from there to the Tennessee line, you could see smoke from both plants, the Ducktown Copper Company's plant, and also from the Tennessee Copper Company's plant. We talked about it and noted it, and the smoke from the D. S. & I. Company's plant was, but you could not see a bit of it any further than Calloway, about a mile, or a mile and a quarter from the D. S. C. & I. plant. Then from the tall stack, it went into Georgia as far as you could see.

839 Mr. DRAKE: I did not understand how far you said it went into Georgia.

A. As far as you could see off the mountain.

Q. 85. Could you tell the drift of the smoke from the Tennessee Company's plant?

A. Yes, sir.

Q. 86. What smoke does escape from the plant of the Ducktown Company; state whether or not it is diffuse- to the extent that it is appreciable before — reaches the Tennessee Company's plant?

A. It is.

Q. 87. Does it or not have to drift through the hills before it gets to the Tennessee Company's plant?

A. Yes, sir. The hills are higher than the D. S. C. & I. Company's plant.

Q. 88. Probably how many days have you spent in the last two years around in that territory, that lies immediately south and southwestwardly from Copperhill, in Georgia?

A. Well, I could not say. Last year I spent most of the summer in that territory, that is I had to make a trip most every week from May until in October, 1912.

Q. 89. How was it in 1912?

A. Well, *it* was not in that territory a good deal in 1912.

Q. 90. Were you a member of the party that was down there in 1912, that camped on Jacks River?

A. Yes, sir.

Q. 91. Tell in a general way, the extent of your travels through there, in 1912?

A. Well, in 1912, on that camping expedition, we spent eight days, I think that was, in the month of September, and we were making an inspection of the Vestal property. Then in 1913,

840 I think we spent twenty-one days on that property, and the Casker Lumber Company's property.

Q. 92. That is the Vestal land, which was owned by H. P. Vestal and J. H. Vestal, or claimed by them?

A. Yes, sir.

Q. 93. State whether or not each of these men had a suit pending

against the Ducktown Copper Company, in the United States district court, at Chattanooga, at that time?

A. Yes, sir.

Q. 94. And did or not your party inspect those lands about those years, with a view of finding the conditions?

A. Yes, sir.

Q. 95. I will get you to state whether or not any colored photographs were taken by Prof. Bane, of the University of Tennessee, of the territory of North Georgia, southwardly and southwestwardly from Copperhill?

A. We taken a great many.

Q. 96. And were or not, those photographs placed in evidence in this Vestal case?

A. Yes, sir.

Mr. DRAKE: We except to that; the evidence in that case is the best evidence.

Objection overruled, appeal prayed and granted.

Mr. MILLER: I will state for your information, and it can go into the record, after the case was tried, they were withdrawn by consent of all parties, because there was no appeal, and will be offered here, that is the reason I am proving by him.

Q. 97. You were with Prof. Bane when these colored photographs were taken?

A. Yes, sir, I have been with him on every trip.

Q. 98. I will get you to state whether or not you were perfectly familiar with the various localities, where these photographs
841 were taken?

A. I was.

Q. 99. Were you with him on all those trips down there?

A. Yes, sir.

Q. 100. Did you state to him, in each instance, where you were so he could identify the photograph for future reference?

A. Yes, sir.

Mr. DRAKE: Except to that question, as to what he stated to the gentlemen, as being irrelevant and incompetent.

Q. 101. Since the trial of the Vestal cases, since the taking of the photograph for use in this case, has or not Prof. Bane taken other photographs when he would go down there, in company with you, for the purpose of being used in this case?

A. Yes, sir; taken forty-five last week.

Q. 102. Were you familiar with all the localities where they were taken?

A. Yes, sir.

Q. 103. Did you or not give him the various localities where the photographs were taken?

A. I did.

Q. 104. Was that done for the purpose of helping him to identify them when he came on the witness stand?

A. Yes, sir.

Q. 105. From your knowledge of the time the photographs were taken, and seeing the photographs after they were taken, I will get you to state whether or not they appear to be a perfect representation, or picture of the foliage?

A. They are.

Mr. DRAKE: I except to that question because this gentleman has not qualified as an expert, and he has not stated anything on which to base an opinion.

843 Q. 106. Now, if the timber is green when the photograph is taken, how does it appear in the photograph?

A. Green.

Q. 107. And if it is dead, how does it appear?

A. Dead.

Q. 108. So, if there is dead timber on that section, the photographs will reveal it?

A. Yes, sir.

Q. 109. Now, what condition did you find the timber and the crops and gardens in, when you went down through the Jacko River section, in 1912?

A. Good. Except it was a very dry season,—in 1913 it was a dry season, in 1912 it was better, more rain.

Q. 110. Did you, party, while camping there on Jacko River, purchase supplies, vegetables and grain, fruits, from the farmers around there?

A. Yes, sir, grain and supplies right there in that country.

Q. 111. Well, what sort of grain, fruit and vegetables did you get?

A. Splendid.

Q. 112. And how was the territory that intervened between there and the Copperhill, coming back within say a couple of miles of Copperhill?

A. Good.

Q. 113. Did you find any damage being done by smoke down in that section anywhere?

A. Absolutely none. In 1912, was very fine fruit. It was not as good in 1913, owing to late frosts, and crops were not as good in 1913 as in 1912.

Q. 114. How close to Copperhill could you observe growing fruit and orchards in 1912?

A. As close as two miles.

843 Q. 115. And as you travel outwardly, southwestly, and southwestwardly there, did the conditions seem to get worse or better or now?

A. We got no sign of smoke in that country in 1913 or 1912.

Q. 116. Did you, from your camp, on Jacko River, travel in all directions?

A. Yes, sir.

Q. 117. Did you ride back and forth through the fields and forests?

A. Well, we did not ride through any fields, unless we did right

close to the camp, passing through the fields on horseback, but practically all the time we were in the woods, timber.

Q. 116. Were you able to ride at all times through the woods?

A. No, sir, the ground was too rough, and we had to walk part of the time.

Q. 117. State if you were on the side of the mountain, and through the timber that grew on the sides of the mountains and hills that face the Tennessee Copper Company, and Ducktown Copper Company?

A. We were.

Q. 118. Have you been on those hillsides a great many times?

A. A great many times.

Q. 119. What is the condition of the timber there now, facing the Ducktown Basin?

A. Very good, on Double Creek, that runs almost due north and south, the timber is growing within three miles of the Tennessee Copper Company's plant, that is about six miles from the U. S. C. & I. Company's plant. We have several photographs of that section all through there.

Q. 120. Now, assuming that any damage was done through the North Georgia section, as Mr. Gilreath, Mr. Yates, and others have claimed there, I will get you to take that, from your experience of the section, would that the escape of smoke take

A. You mean in Georgia?

Q. 120. Yes, sir.

A. Why, on the Ocoee, or Ocoe River, it would go further down to any other direction in Georgia.

Q. 121. Why is that, would the smoke follow the water course?

A. Yes, sir, and the valleys, and the wind blowing from the northwest, perhaps would take it in that direction further down to any other way.

Q. 122. What has been your experience as to where the volumes of smoke that would be emitted from the plant of the Tennessee Copper Company, would travel, in which direction would it go, and why?

A. Well, as I just said it would go further in the southeast direction, I think, than any other way.

Q. 123. Is it so not, anyway, very close to the Ocoee River?

A. Yes, sir, right on the bank.

Q. 124. How far is it from the Ocoee River River—the smoke of the Ducktown plant emitted?

A. About three miles and a half, as the

Q. 125. Assuming, as it has frequently been contended, that the smoke would travel down Double Creek, and then to the Ocoee River, I will ask you how far northeasterly from Upper Hill, Double Creek enters into the Ocoee River, about Upper Hill?

A. It would travel four miles, or three or five, as the

Q. 126. As the crow runs?

A. It is about two miles.

Q. 127. And probably what would be the distance that the smoke

would have to travel, if there was sufficient volume of it a minute, at Isabella, to travel down Potato Creek, and into the Ocoee River?

A. As the creek runs?

Q. 131. Yes.

A. The creek is very crooked, zig-zag down through the hills, it would be between three and four miles, as the creek runs, but no- so far on the air line.

Q. 132. That, if the smoke from the Isabella plant, in fact, got into the southern territory, that lies south of Copper Hill, by way of Potato Creek, it would first drift down the creek to the Ocoee River, and then back up the river, a reverse course to get back into that southern section?

A. Yes, sir.

Q. 133. From your experience and observation, does the smoke do that?

A. No, sir.

Q. 134. Were you a member of a party that took a trip to Overton and other counties of Tennessee, to observe the death rate of timber, hundreds of miles away from the Ducktown basin?

A. Yes, sir, I was with a party, this year, 1914.

Q. 135. What counties of Tennessee were you in on that trip?

A. We were in Anderson County, Rhea County, Morgan County, Scott County, Overton County, and Putnam, Fentress County and perhaps some others that I do not recall to memory now.

Q. 136. What did you find the condition of the timber growing in that tier of counties that you have described in Tennessee, as compared with the timber down in the North Georgia sec-
846 tion, that lies south, southeastwardly and southwestwardly from Copper Hill?

Mr. DRAKE: We except to the question as being irrelevant, incompetent and a conclusion which is unwarranted.

Exception overruled, and appeal prayed and granted.

A. There is a great deal of dead timber in all of these counties, more so even than anywhere in Polk County or Fannin County, or Union, or part of North Georgia. Now, I was also in North Carolina, in several counties, and there was a great deal more dead timber in these counties, than in all the North Georgia Section.

Q. 136. Were there or not, any smelting plants or any other plants in those counties of North Carolina, or Tennessee so far as you could see or learn of, *or* that would have wrought the wholesale destruction to the timber, which you found?

A. *Is* not that I know of, except the iron furnace at Rockwood.

Mr. DRAKE: I want to except to that as being irrelevant, incompetent, and not reflecting on any issue in this case.

Q. 137. I will get you to state whether or not there have been frequent forest fires in the section of Georgia that lies immediately south of Copper Hill, to the southeast and southwest?

A. Yes, sir, a good dead of kinds of forest fires.

Q. 138. How frequent are those forest fires down there?

A. They seem to be every year.

Q. 139. How extensive are they?

A. Very extensive, and in some places, especially in the mountains.

Q. 140. What effect do they have on—those forest fires, on growing timber?

A. It kills a great deal of it, especially when it is burnt in the spring of the year.

847 Q. 141. To what extent has that country down there been milled over, the timber cut off for saw purposes?

A. Well, on the Vestal property, the most of it, that was acceptable, or had merchantable timber on it, has been cut off.

Q. 142. How many times has it been cut over?

A. Well, from one to four times.

Q. 143. What was done generally with the laps of the trees, when cut?

A. They were left on the ground until the forest fires came along and burnt them up, or partially burnt them up.

Q. 144. State whether or not there has been frequently sawmills, or sites, through that section?

A. Yes, sir.

Q. 145. What has been your experience, or observation, as to the grade of timber around the saw mills *sets*?

A. Well, it has been great. Most generally where the laps are left on the ground, fire comes in and burns up the dead timber, that is the laps, and kills a great deal of the green standing timber.

Mr. DRAKE: I except to that as being irrelevant, incompetent, and not illustrating any issues in this lawsuit.

Q. 146. Do you know whether or not worms or bettles are in that timber that stands near a sawmill site?

A. Yes, sir, I think worms generally follow these fires, and kill a great deal of the timber.

Mr. DRAKE: We except to that answer for the reason it is a conclusion, without any facts being stated on which to base it, and irrelevant also.

Exception overruled, and appeal prayed and granted.

Q. 147. Making allowance for the ravages due to forest fires and the cutting of the timber for mill purposes so frequently
848 in that north Georgia section, I will get you to state if there is any great death rate of timber down there in that section, or any other section you have been in, in years?

A. I think not. In Morgan County, in fact all those counties in Tennessee, nearly all of the timber—chestnut timber is dead in some places, and in some places it has been a very heavy timber country, and in some places all the chestnut is dead, and the white pine is dying from some cause, I do not know what.

Q. 148. There have been several witnesses asked about a man named J. Y. Allen down in Georgia?

A. Yes, sir.

Q. 142. He was introduced as a witness for Shippen Brothers I believe, in their case?
A. Yes, sir.

Mr. DRAKE: We except to that question as irrelevant.
Exception overruled and appeal prayed and granted.

Q. 150. Did you see the corn crop growing on the land belonging to him when you were there, on these visits?
A. In 1912?
Q. 151. Yes.
A. Yes, sir.
Q. 152. What character of corn was growing there?
A. A good one.
Q. 153. Were you present when this man Allen was called as a witness in concluding the testimony in the Shippin Brothers case, at Athens, Tennessee, on their behalf?
A. Yes, sir, I was.

Mr. DRAKE: We object to the question as being irrelevant.
Objection overruled, and appeal prayed and granted.

Q. 154. Did you hear Mr. Allen there state, under his oath that he would go home with you, or meet you, and go to his house
849 and bring away samples of corn as exhibits for the district judge to see and inspect them, and to be filed as exhibits in that case?

Mr. DRAKE: We except to that question for the reason that it is incompetent and irrelevant.

Q. 155. State if pursuant to that agreement, you visited Mr. Allen's house for the purpose of getting the samples that he promised?
A. I did.
Q. 156. What happened when you got there?
A. When I got there, the agreement between me and him was for him to see me at Blue Ridge on a certain date, I do not remember the date now. I have it in my note book. When I got off the train. he was not anywhere around to be found. I inquired for him, and someone told me that he had been there but had left. I went to his home, and his wife told me he had went to the farm, so I went to the farm, and asked him for the sample of corn and he refused to give it to me.

Mr. DRAKE: We except to that answer, as being incompetent, and irrelevant to this case.

Objection overruled, and appeal prayed and granted.
Mr. MILLER: I can see that it is, unless Mr. Allen was introduced by the State of Georgia, and I assume that he will be.

Q. 156. Now, I will get you to state whether or not Mr. Allen tried to pick a fuss with you, after you arrived there?
A. He seemed to be mad or excited when I came up, and he

talked in an insulting way to me. I suggested to him that he give me the sample of corn. I saw that his only purpose was to pick a fuss, and there was nobody with me. There were three of them, and so they taken me in the saddle room, or cutting room, whatever you might call it, in his barn, and opened up a barrel of corn, and said, "This is the kind of corn, this is what your damned old smoke has done. This is the kind of corn I have to make my bread
850 out of." There was another barrel sitting there, as fine corn as I ever saw, and I said, "Why do you not give this?" He said, "This is a different kind of corn." I said if the smoke did not effect it, I would plant it. I saw that we might have trouble, and I suggested for the second or third time that we get this corn out of the crib, and he finally said, "You are on the other side, and you cannot get a damned thing out of me." Well, I said, "All right," and when he went away a third party come up, and stepped around the barn, and his tenant said, "I looked for him to run you off." He said he was not going to give you the sample of corn." I said, "Well, I will leave if he is not going to give it to me," and came away to Chattanooga.

Mr. DRAKE: We except to that because it is incompetent, irrelevant, and in no way illustrates any issues in this lawsuit, and all the hearsay evidence of Allen's tenant.

Exception overruled, and appeal prayed and granted.

Q. 157. State whether or not this man Allen did not have a good corn crop?

A. He did have as fine as I saw that year anyway, in all my travel, I never saw any to equal it. My evidence in that case was that it would make from fifty to sixty bushels, and some thought it would go as high as eighty.

Q. 158. An acre?

A. An acre, yes sir.

Q. 159. During your visits in North Georgia, these frequent visits you have made, did you have any object except to ascertain fairly the conditions, and honestly report them?

A. None whatever.

Q. 160. Have you any interest in the Ducktown Copper Company as a stockholder, or otherwise?

A. No, sir.

Q. 161. What were the instructions you were given from time to time when you were sent out to learn as to the conditions,
851 by the manager?

A. To make fair and impartial reports, and honest reports.

Further deponent saith not.

____ ____.

Sworn to before me this 18th day of June, A. D. 1914.

____ ____,

Clerk and Master.

Distance travelled by this witness is 246 miles.

The hour growing late, the further taking of depositions in this cause was adjourned until 9 o'clock, a. m., Friday, June 19th, at which time, pursuant to adjournment, the further taking of depositions in this cause, was resumed at the same place, and in the presence of the same parties, as mentioned hereinabove.

852 M. T. FOUTS, the next witness called on behalf of defendants herein, being first duly sworn, upon direct examination deposed as follows:

Direct examination.

Questions by Mr. W. B. MILLER:

Q. Mr. Fouts, how old are you?
A. I am sixty-six years old.
Q. You live at Cleveland, Tennessee?
A. Yes, sir.
Q. Have you recently been Postmaster at Cleveland, and if so, for how long?
A. I was Postmaster at Cleveland for seven months.
Q. Recently?
A. Yes, sir, I went out the first day of last July.
Q. Did you ever serve in the State Legislature of Tennessee, in either the House or the Senate?
A. Yes, sir, I served in both.
Q. You were representative from what County?
A. I was representative once from Bradley and Polk Counties, and once from Monroe and Loudon, and Senatorial of five counties, of McMinn, James, Bradley, Polk and Monroe.
Q. Then, you have represented in the House of Representatives at Nashville, two terms, and in the State Senate one term?
A. Yes, sir.
Q. I understand you formerly lived in Polk County?
A. In Polk County up to seven years ago.
Q. Were you a member of what was known as the Mayfield Commission, that was sent out to locate the smoke zone in the Spring of 1901, by the Ducktown Copper Company?
A. Yes, sir.
Q. You were accompanied on that trip by whom?
A. By Sherman Reese, Tom Biggs, Rollins, we called him
853 Bud Rollins, J. P. John Hall, I believe, and Edward Charles Parks, I guess.
Q. That is Mr. George Parks who is here as a witness?
A. Yes, sir.
Q. Mr. Biggs, I believe, is dead?
A. Yes, sir.
Q. Mr. Reese is here as a witness?
A. Yes, sir.
Q. If you gentlemen went out in 1901 as members of that Commission, did you have any other purposes or object in view except

to correctly locate the outside or damage of the smoke zone and faithfully report the facts?

A. That was our mission.

Mr. DRAKE: We except to that evidence as being irrelevant and incompetent, for the reason that it does not in any way *isuls trate* the issue in this cause.

Exception overruled, appeal prayed and granted.

Q. State if you spent several days on that mission, and if you correctly located the smoke zone?

A. Yes, sir.

Q. Where was the outside of that zone, as compared with the inside of the range of mountains that form the rim of the Ducktown basin?

A. Well, the—I do not know that I exactly understand your question.

Q. How far from the Ducktown Copper Company's plant did that smoke zone extend?

A. Well, from three to four miles, further in some directions than others.

Q. Was it, or not confined to the Ducktown basin?

A. Yes, sir, principally, except a few low gaps, or two, where it extended outside of the Ducktown basin.

Q. Did it extent any considerable distance?

854 A. No sir.

Q. At that time the Ducktown Copper Company had been operating some years, ten years, I believe?

A. Well, a long time, something like ten or twelve years I suppose. It started in '92 or '90, somewhere along there.

Q. Now, did you at any time go, or have you been into the North Georgia section of country that lies immediately south of Copper Hill?

A. Yes, sir.

Q. How extensively have you been over that North Georgia section?

A. Well, I have been over it some two or three times, different times, out beyond, as far out, as far as Ellijay.

Q. When were you down there last?

A. I believe it was in 1906 or 1905.

Mr. DRAKE: I except to *to* that evidence as it relates to the conditions prior to 1907, that being irrelevant and incompetent for the fact that it does not in any way illustrate the issues in this case.

Exception overruled; appeal prayed and granted.

Q. Have you been at Ducktown and Copperhill in recent years?

A. Yes, sir.

Q. Have you observed the sides of the mountains of the Ducktown basin when you would be in Copperhill or Ducktown?

A. Yes, sir.

Q. State whether or not you have also made a recent trip through

any of the Tennessee counties, with a view of ascertaining the death rate of timber hundreds of miles away from the Ducktown basin?

A. Yes, sir.

Q. What counties of Tennessee did you visit?

A. I visited Rhea County, Morgan County, Cumberland
855 County, and Fentress County.

Q. Did you go into Putnam County?

A. Putnam? Yes sir.

Q. Did you go into Roane and Overton Counties?

A. Roane and Overton Counties, yes, sir.

Q. What did you find as to the condition of timber in these various Tennessee Counties just enumerated by you, what was the death rate there as compared to what it is on the mountains forming the rim of the Ducktown basin?

Mr. DRAKE: I except to this question, and except to answer, as it would be irrelevant and immaterial, and not in any way illustrating the issues in this case.

Q. What did you find, I say, Mr. Fouts, as between the two sections of country as to the death rate of timber?

A. Well, the death rate of timber outside the Ducktown basin and adjecent to the mines, from five to ten miles and further, was very much larger, a larger per cent of it dead timber than was in and around Ducktown, except in the immediate vicinity of the mines, and the basin.

Q. When you speak of the territory outside of the Ducktown mines, the basin, do you, or not, mean that tier of counties of Tennessee, consisting of Overton, Fentress, and the other Counties you named?

A. Yes, sir.

Q. Do I understand that in that tier of counties you found the death rate of timber much greater than you did around the Ducktown basin, when you got away from the territory of the mines?

A. Yes, sir.

Q. What appeared to be the cause of the heavy death rate of the timber in these various Tennessee Counties which you have named?

A. Well, we can place as to surmise what that was, accord-
856 ing to the citizens, it was the talk that it was fire, and dry weather that caused the death rate of the timber out on the Cumberland range.

Q. Were these Tennessee Counties that you had named located on the Cumberland Mountain, and adjacent to it?

A. Yes, sir.

Q. State whether they have all of them forests or timber lands, large tracts of timber lands?

A. Up there in Morgan County there is a very large per cent of timber, trees laying on the ground, dead, and chestnut timber dead. Never saw a green chestnut tree in that portion of the country, or next to Lansing.

Q. Do these Tennessee Counties you have named all comprise large tracts of timber land?

A. Yes, sir.

Q. Now, after you left the Ducktown Basin, and got up on the mountain forming the rim of the Ducktown basin, or after you get three, four or five miles from Isabella plain, now what was the death rate of timber as compared to what it was in these Tennessee Counties mentioned?

A. Well, the per cent is much larger, the dead timber, than it is five or six miles from Isabella.

Mr. DRAKE: We except to all the evidence as to the condition of timber in Cumberland, Fentress and Morgan and the other counties named, for the reason that it is irrelevant and immaterial.

Exception overruled, appeal prayed and granted.

Q. Going in any direction from the village of Isabella what is the condition of the timber after you got four or five miles away from the plant, as to death rate, as compared to what it is in these Tennessee counties that you have recently visited.

A. The dead timber in those counties visited is much larger, than it is in from four to six miles from Ducktown, that is, except through the low gaps, and down the Ocoee River.

857 Q. I understand the death rate of timber is greater when you get away from the Ducktown basin, in these outside counties than it is in the Ducktown Basin section?

A. The counties I have been in, it is, yes, sir.

Q. Now, were there any furnaces or smelting plants operated in these Tennessee Counties that you have talked about?

A. Well, there were some coke ovens, I do not know what you call them in Cumberland County, Roane County, and around Rockwood.

Q. They are not supposed to be very detrimental to timber?

A. No, the timber around Rockwood is better than away from three.

Mr. DRAKE: We except to that as leading, and being a conclusion without facts upon which to base it.

Q. You say you did find healthy, growing timber around the coke ovens?

A. Yes, sir, within a few hundred yards of it.

Q. Within a few hundred yards of them?

A. Yes, sir, right close to it.

Q. Were you familiar with the Ducktown section before the acid plants were built and put into operation by the two copper companies doing business there, the Tennessee and the Ducktown companies?

A. Yes, sir.

Q. You knew the conditions up in that section, before these acid plants were installed?

A. Yes, sir.

Q. Now, since the acid plants have been put into operation, state whether or not the conditions as to vegetation and crops, gardens and forestry, have improved?

A. They certainly have, very much. In 1901, there was nothing growing in and around the basin, to amount to anything, not hardly

a tree. Now, there is shade trees, gardens, and I see alfalfa
858 clover growing in one hundred yards of the Isabella Company the other day, something I never saw growing in Polk County.

Q. What have you to say as to the gardens and orchards now, in the Ducktown basin, what have you observed as to those?

A. Well, some of the gardens I know have been there for two or three years, and the finest peaches I ever saw growing in my life I saw growing in Ducktown last year; apples, I did not see any.

Q. State whether or not you have observed the North Georgia farms and farmers, those fellows that live in Fannin County near the Tennessee line, near Copperhill, growing farm and vegetable products and bringing them into Ducktown to be sold?

A. Yes, sir, they are growing vegetables, and one, Mr. Payne, had some of the finest apples I ever seen grown in the north, six or seven miles of the Isabella country.

Q. When was that?

A. Last year.

Q. You were down in that section.

A. I was not immediately on his place, but I saw the apples.

Q. Now, it is maintained in this controversy by the State of Georgia, as I understand, that the operations of the Ducktown Company, as they have been carried on since that acid plant was put up, are dealing destruction to the crops and the timber in the North Georgia section.

Mr. DRAKE: I object to that as being argumentative and suggestive.

Q. State, Mr. Fouts, from your personal knowledge, that is correct?

A. I think it is.

Q. You think the crops down there are dying as the result of the——

A. (Interrupting.) How is that question?

859 (Question read.)

A. No, sir, I want to correct my answer. I did not understand the question.

Q. State whether or not such is the case?

A. As far as my observation is concerned, it is not.

Q. If the operation of the Ducktown Copper Company would affect vegetation and the forests down in North Georgia, from your experience and observation, what signs would there be before you reached the North Georgia country, and how would it affect vegetation and trees on the hills that intervene between Isabella and the Georgia line?

A. Well, I take it that the closer in, the more destructive it would be to it. Damage would be larger and less in proportion to the distance away, the way I observe that smoke trouble.

Q. That has been the result of your experience?

A. Yes, sir.

Cross-examination.

Questions by J. A. DRAKE:

Q. How long have you been away from Ducktown, living away from there?

A. Well, I have never lived in the basin. I lived in the County, but never did live in the Ducktown basin.

Q. How far was the nearest you ever lived to the Copper Companies?

A. Twenty-five miles down the river.

Q. How much, and at what times have you been employed by these Copper Companies?

A. I was employed in 1901, and have been with them at different times since.

Q. Well, are you not still in the employ of these Companies, and haven't you been this year?

A. Well, I have never been in the employ of the Companies
860 except as an inspector, and I was making inspection of the extent of the smoke injury, that is the only way I have been employed by them.

Q. You have been employed in that capacity for, as I understand you, then, from 1901?

A. Yes, sir.

Q. Are you a botanist or a chemist, or in any manner an expert?

A. I do not profess to be.

Q. As to the causes of fumes, on this question?

A. I do not confess to be, sir, at all.

Q. How far away is Fentress County, and Cumberland County, and the tier of counties that you say you visited, these counties you have just named in your original examination, from Ducktown?

A. Oh, I suppose in the neighborhood of one hundred and twenty-five or one hundred and fifty miles.

Q. Why did you go one hundred and twenty-five or one hundred and fifty miles away to inspect forests down in that Section of Tennessee for the purpose of comparison? Could not you have found a great deal of forest that was removed from that smoke affected territory without going one hundred and fifty miles?

A. I think we could.

Q. Didn't you and couldn't you have passed through thousands of acres of fine and good forests before you reached Fentress and Cumberland Counties?

A. Yes, sir.

Q. Countries that were not affected by anything, were they not?

A. Yes, sir, timber was more or less affected in every county we went through, but the affection was worse in the counties mentioned than it was there near the mines.

Q. You did not stop to inspect all of the counties between Ducktown and Fentress County, did you?

861 A. No, sir, I did not stop in those counties.

Q. Didn't you go on the railroad, and make a bee line

for these counties named, away down here at the edge of middle Tennessee?

A. We began the inspection over in Rhea County.

Q. Please answer my question.

A. That is, yes, sir, we went direct to them counties.

Q. Then you did not stop and inspect the counties you went through?

A. No, we did not stop and inspect the counties through which we went on that trip.

Q. Now, will you please answer me why you went to these counties in Middle Tennessee and made your first stop?

A. Well, I do not know what the special reason was, except to get clear away from the influence of the Ducktown sulphur fumes.

Q. Don't you know that you were sent down there, and your party, because, for some local reason down there, timber had been killed, and your people had been advised of it, and you went there to find the worst section of dead timber you could here in all the State of Tennessee?

A. No, I do not know that.

Q. Did you have to go one hundred and fifty miles to get out from under the influence of the Ducktown Copper Company's smoke?

A. No, sir.

Q. Didn't you just state that was the reason you went over there one hundred and fifty miles away?

A. Well, that was the reason we went over there, for comparison, by way of comparison to know the damage to timber entirely away from the Ducktown smoke, where there was no chance of the Ducktown smoke.

862 Q. Didn't I just ask you if you did have to go that far to get away from it, and didn't you state you did not?

A. We did not.

Q. Then, why did your party go one hundred and fifty miles, when you could have gotten outside of the influence of it, inside of fifty miles?

A. I do not know why we went over there except what I have just stated.

Q. Then, you do not know why you went?

A. I know we went over there for examination, which we did.

Q. Were you not sent over there?

A. Yes, sir, we were.

Q. By the Ducktown Copper Company.

A. Yes, sir.

Q. And they told you where to go?

A. No, sir, they did not tell me where to go.

Q. Did they tell any of the party that you were to go there?

A. I do not know. I joined the party, and Mr. Sherman Reese was our leader.

Q. He is an employee of the Company, is he not?

A. Yes, sir.

Q. You speak of conditions that obtained over there in North Georgia. How long has it been since you went through the North Georgia Section?

A. Well, I have not made an inspection through the North Georgia section, possibly, since 1906.

Q. You have not inspected that country, then, since the acid plants were put up?

A. No, sir, not very far.

Q. You do not know, then, anything about the conditions that are over there now, except what the folks have told you, do
863 you?

A. Well, I——

Q. Answer my question?

A. I do not know anything, only I have been out some six or seven miles South of Ducktown last August.

Q. Read the question again, please.

(Question read.)

A. Yes, sir, I know the conditions some six or seven miles. Last August I was out there.

Q. Did you make an inspection out there last August?

Q. Well, sir, I went out there to look through and notice the comparison, and noticed the timber. I was talking about it.

Q. Who sent you out there last August?

A. I was not sent over there by the Company last August.

Q. Why did you go over there?

A. I went over there with some other parties. We were over there to attend a road meeting.

Q. Then, you just went down to caucus the big road over there, and to what point?

A. Let's see—what is the name of that place, it is a little village of a place over there. I don't remember, it is some four to six miles south of Copperhill.

Q. How long were you over there?

A. We were over there one day.

Q. Well, cannot you remember the place you went to in North Georgia, if you are well acquainted in that country as you say you are.

A. I forget what they call it; it is right close to Phillips' place, out there. At Pierceville.

Q. Now, is not the truth of the business that you are not
864 well enough acquainted in North Georgia to know the names of the points over there in that section, are you?

A. Well, I do not know the names of all of them, no.

Q. You did not get out of your buggy, or off of your horse, or away from them, to go out through the orchards and gardens and see what kind of smoke damage was done over there last August, did you?

A. No, sir, I went along noticing the timber and conditions generally, as I went down through that country before.

Q. That is all you know of it, as I understand, since 1906?

A. All the time I have been out in that country since 1906.

Q. As I understand you, then, when you say that conditions are much improved since the acid plants were put in, is that the local conditions around Ducktown and where you are from yourself, that is the condition you speak of as being so greatly improved?

A. Yes, sir, of course that is the portion I have been in. I have been in town two or three times recently, and find the conditions and the different stuff growing and doing fine there, where there was nothing of the kind in 1903.

Q. In 1903, there old open roasting chambers were being used?

A. Yes, sir.

Q. And they killed everything in the locality there or community there, didn't they, practically?

A. Everything was killed down in the basin, yes, sir.

Q. And since the chambers have been put in, and they have changed their methods of roasting ore and handling the smoke, since 1906, you have not been ten to fifteen or twenty miles
9/5 down into the State of Georgia and seen the conditions, have you?

A. I have not, sir.

Q. You were a witness several times before in these Ducktown cases for these companies, have you not been?

A. Well, yes sir, I have been.

Q. How many times have you been a witness?

A. Oh, I do not remember how many times.

Q. Well, are you not a witness every time they have any results?

A. No, I have not been a witness only in all their lawsuits. I have not been called on in all their lawsuits.

Q. Have you been a witness twice?

A. I guess so.

Q. Haven't you been a witness in all the big suits, the more important suits that they have had?

A. Well, I do not know. I have been in several, however, in the course of their suits, but not in all of them.

Q. I will ask you if you made an affidavit in the original case in this cause here? In 1906 or 1907, along there, did you make an affidavit for the company as to conditions that obtained along about 1905, or 1906?

A. Yes, sir.

Q. Now, in that affidavit, I have just asked you about, didn't you state that the conditions then were so good and greatly improved since the old roasting had been done away with, and that there was no damage being done in North Georgia?

A. Well, I do not know, I guess very likely I did. That was my opinion of the matter.

Q. And that there was no damage being done at that time, in 1905 and 1906?

A. No, sir, not at that time.

Q. And you do not think there has been any damage done there since 1906, or before that—1910, I mean?

[illegible]

A. [illegible]

Q. I think the conclusion from your statement that you came to on, then, that this matter in that action, in that State Circuit Court, is a benefit to the Station as it is?

A. Yes, sir, I have not said so. I do not think it is.

Q. You do not come here, by saying that the matter is going to Daviess County, and that the conditions go some way here, you do not come by that statement that the matter benefits the company, do you?

A. No, I do not come that.

Q. I believe you state that you did not think that more [illegible] the matter damaged that country after it got into it the suit?

A. No, sir, after it got down in the suit, from the depth of [illegible].

Q. Since 1891. You were a witness in the Skaggs Bay case against the Tennessee Company, were you not, in the Federal Court?

A. No, sir.

Q. Is there another M. F. Rowe up in that country?

A. Not that I know of.

Q. I think you do not understand me now. I say Skaggs Bay Company against the Copper Company, and the evidence was taken at Atlanta, or at Chattanooga, in the Commissioner's Court. Don't you remember being a witness in that case?

A. At Atlanta?

Q. Or Chattanooga. Some the evidence was taken before a Commissioner?

A. I do not remember of being a witness in the Skaggs Bay Case. I do not remember that suit at all.

Q. I wish you would look at his evidence to refresh your memory, and see if you did not state about that thing to that case right here (passing record to witness, and him reading as record).

A. (After examining record.) Yes, this is my evidence, and I do not understand it to be the Skaggs case.

Q. I thought you probably did not remember. Have you a copy of them. [illegible] you state in that you had you found that timber that you thought was killed by smoke or by or those acids also from those plants?

A. I do not think I did, sir.

Q. Was not this question asked you (reading): "You have now had further down the Ocoee River." "Yes"——

A. Yes, sir, I understood you to say——

Q. And did you not answer (reading): "Yes, it was those acids or some that I thought the smoke killed."

A. Yes, sir, I did, but I thought you said in Polk County. I did a few minutes ago down the Ocoee River smoke could not work further. Yes, sir, I said that.

Q. You could not have had in a case here in Georgia, or you have not been down here ever since you at the same court, you?

A. Well, I have been in Georgia several times, down around Ellijay and through that country, but I never found the extent of timber being killed in that locality, nothing like it was down the Ocoee River.

Q. Not since 1906, as you have just awhile ago stated?

A. Not except that trip last August, I was out some four or five miles.

Redirect examination.

Questions by W. B. MILLER:

Q. This Mr. W. H. Shippen, who was at the head of the Shippen Bros. Company, is here and assisting to coach counsel for the State of Georgia?

A. How is that question?

868 Q. Mr. W. H. Shippen, of the Shippen Bros. Lumber Company is here today assisting counsel for the State of Georgia?

A. I do not know Mr. Shippen.

Q. You do not know the gentlemen sitting over there by the counsel?

MR. DRAKE: We will admit, and you can put it in the record that he is here, and that he is a citizen of Georgia.

Q. Now, you say you gave your deposition in the Shippen Bros. case, where Mr. Shippen was examined; has he ever explained to the satisfaction of you or anybody else why it is that he does not want the Tennessee Copper Company to run, and wants to close the Ducktown Company?

MR. DRAKE: We except to that as being irrelevant and incompetent, and could by no purpose be competent in this cause.

Exception overruled; appeal prayed and granted.

Q. Can you conceive why the citizens of Georgia want the large companies, right on the State line to operate, and want to close the little one a few miles further away up in Tennessee?

MR. DRAKE: We object to the question as incompetent and irrelevant.

Exception overruled; appeal prayed and granted.

A. I could in a way.

Q. What explanation have you got about that?

A. The information I had while I was in Ellijay was that if the mines were to be shut down, they could run their works at seventy-five cents a day, and they could not do it while the mines were running.

MR. DRAKE: I except to that question and answer as being incompetent, irrelevant and immaterial, and put in for no other purpose evidently than to burden the record, and because of hearsay.

MR. MILLER: Thank you.

869 Exception overruled; appeal prayed and granted.

Q. You say your connection with either of the Companies has been solely that of an inspector?

A. Solely. I never was employed by the Company for any other business.

Q. Although you are not a botanist, I will get you to state whether or not you know dead timber whenever you see it?

A. I think I know dead timber whenever I see it, yes, sir.

Q. Have you not, since 1906, often been in Ducktown basin?

A. Yes, sir, I have been there, every once in a while I am up there.

Q. Were you, before the year 1906, and from 1901, up to 1906, frequently in the basin?

A. Yes, sir.

Recross-examination.

Questions by J. A. DRAKE:

Q. You have stated, Mr. Fouts, that you have heard and believed some reasons, and I will ask you if it is not a fact that the Tennessee Copper Company has entered into an agreement with the State of Georgia and has been trying to control and abate that nuisance up there, while the Ducktown Copper Company would not do anything, and has never treated the State of Georgia with any consideration whatever.

A. No, sir, not that I know of.

Q. Don't you know that as well as what you have stated about Mr. Shippen awhile ago, and a whole lot better?

A. I have learned that the Tennessee Copper Company made terms with the Georgia authorities, but I do not know that they have.

Redirect examination.

Questions by W. B. MILLER:

870 Q. In other words, that Company has met the requirements of the legislative resolution to pay two thousand dollars annually to Commissioners named by the Governor, and to dispense among the citizens of North Georgia?

A. I know nothing at all as to that except what I heard.

Mr. DRAKE: I except to that, as the contract will be the best evidence of what the trade with the State of Georgia is, and that is a document in this law-suit.

Further this deponent saith not.

Sworn to before me. — day of June, 1914.

——— ———.

The total distance covered by this witness from his home to the place of giving deposition was sixty miles, thirty miles in each direction.

871 R. T. HAMPTON, the next witness sworn for defendant, being first duly sworn upon direct examination deposed as follows:

Direct examination.

Questions by A. FOWLER:

Q. What is your age, Mr. Hampton?
A. Forty-four or soon will be.
Q. Where do you live?
A. I live at Mineral Bluff.
Q. Is that in Georgia?
A. Yes, sir.
Q. About how far from the Georgia line?
A. From the Georgia and Tennessee line?
Q. Yes, sir.
Q. Something like six miles.
Q. How far is that from the Tennessee Copper Company's plant?
A. The S. C. I. Company's plant?
Q. Yes, sir, from the Tennessee Company's plant?
A. About ten miles.
Q. And how far from the Ducktown Copper Company plant?
A. About the same distance.
Q. About the same distance?
A. About the same distance.
Q. What direction is Mineral Bluff from these plants?
A. It is a little south of east.
Q. How long have you been living there?
A. I have been living there about ten years.
Q. What do you do there?
A. I am a merchant.
Q. Do you farm any at all?
A. Yes, sir, I have some farm.
Q. Were you raised on a farm?
A. Yes, sir, raised on a farm.

872 Q. State whether or not — know about the time these acid plants were put into the furnaces?

A. I don't know just exactly the date that the acid plants were put in the Tennessee Copper Company's plant, installed in their plant, but it was in 1907, or 1908, I believe in 1908.

Q. In the Ducktown Company?
A. Yes, sir.
Q. And was the other a little bit later, or not?
A. No, a little bit earlier.
Q. Are you sure as to the exact date?
A. No, I think it was not very much earlier, all about the same time.
Q. Are you sure about the year it was done?
A. No, sir.
Q. Do you know when that high stack was constructed on the Tennessee Company furnace?
A. I do not know the exact year, it was somewhere in 1906.

Q. Do you remember when it was done?
A. I think,—yes, sir.
Q. State whether or not the vegetation and timber in that section of the country was injured after the construction of that high sack?
A. The worst injury we had there, was for about two or three years after the plant was constructed.
Q. What do you mean by the "plant"?
A. The stack.
Q. The stack was constructed?
A. Yes, sir.
Q. How was it previous to that?
A. I do not remember much previous about that, it was not near so bad as it was afterwards, along in 1906, 1907, and 1908.

873 Q. Describe what effect the smoke had on vegetation in your section of the country after the high stack was constructed?

A. There would be times the smoke would come over and be so strong it would make you cough (coughing) and make you hack, that way, and after the smoke cleared away, you would see the little leaves on the vegetables and timber turning brown, and the tender twigs and young vegetation would parch up like a fire had been run over it and scorched it a little.
Q. Did it kill any of the timber?
A. It killed the leaves on it. I suppose it was the cause of a good deal of the timber dying. I don't know what it was.
Q. Did it have any bad effect on the corn and other crops of different kinds?
A. I could not tell you what effect it had on the corn, you could not see it on the corn so soon.
Q. Ho- was it with reference to garden vegetables?
A. It was hard on tomatoes, potatoes and peas.
Q. Now, Mr. Hampton, you say you remember when, or about when, these acid plants were put in: I wish you would state what has been the effect on vegetation during the present year?
A. I have not saw any effect on it. I cannot see any at all.
Q. Was there any effect on the leaves and trees?
A. No.
Q. Or any garden vegetation, anything of that kind?
A. It has been very dry there this summer, and the Irish potatoes are not good.
Q. Is that on account of the drouth?
A. I think so, I have not noticed any smoke over there this year.
Q. How was it during last year, the whole of the year 1913?

874 A. I could not say it damaged anything at all.

Q. Did you notice any damage to timber, or any vegetation of any kind in your section last year?
A. No.
Q. How was it the year before that?
A. I did not see any at that time.

Q. Have you seen any arising from smoke in your section since these acid plants were installed?

A. No, I have not seen any there, any damage there. I will go back and state, if you will allow me.

Mr. FOWLER: Go ahead.

A. In 1906, 1907 and 1908, in July, the leaves on the timber would turn brown just like there was quite a frost, after the smoke would come over, and they would get brown. They would turn brown, and a great many trees would have the leaves *yet* off by the first of September, the leaves had been killed, but since those plants were built, you do not see that now.

Q. That is those acid plants?

A. Since those acid plants were built you do not see that effect. They stay green up until frost.

Q. Until the frost kills them?

A. Yes, sir.

Q. Have you had cultivated any corn, or land near you?

A. Yes, sir, I have four acres cultivated every year for about six years.

Q. What kind of corn do you make?

A. A good crop.

Q. How much per acre?

A. About fifty bushels to the acre.

Q. Have you noticed any injury to the crop of corn?

A. No, sir, I never saw any that I could tell.

Q. Do you notice any dead leaves at all on the trees any more than anywhere else, forty or fifty miles away?

875 A. No, sir, I do not notice any more dead leaves on the trees than appear on the trees fifty miles away. Of course you will see in the forests some dead leaves, and twigs. I have never been in the forest before in my life, even before the plant was put up but what I saw some dead leaves and twigs.

Q. Since those plants have been in operation, have you noticed any extraordinary number of dead leaves in the forest?

A. No, sir.

Q. State whether or not you have traveled through a good part of Fannin County, Georgia, during the last few years?

A. I have traveled pretty near all over it.

Q. Why?

A. I do business in the County, and a great many men I have to see, I ride around over the county to see different parties.

Q. Making those trips through the County, have you observed more or less the vegetation that is grown?

A. Yes, sir; I always do.

Q. During what seasons of the year do you pass through the County?

A. Not any particular season, one time more than another. I will say from the first of May on up until the last of September, that is the better season, the weather is nicer and the men travel more, of course: in the cold season I do not travel much.

Q. Since these acid plants have been installed in the two furnaces,

have you noticed any bad effect on vegetation in Fannin County?

A. No, I could not say it was from the plant that I saw.

Q. In places which were formerly bare, state whether or not there are young trees growing there now, and shrubbery coming up?

A. Yes, sir.

876 *A. Yes, sir.*

Cross-examination.

Questions by J. A. DRAKE:

Q. How old are you?

A. I will soon be forty-four; I believe I gave *ny* age as forty-four.

Q. I did not understand it. How long have you been a merchant over in that County?

A. Well, about ten or tw*le*ve years. Ten years.

Q. Were you employed to travel around over the County for the last two years?

A. No, sir, not by any corporation.

Q. You have not been employed by these Copper Companies to travel around and look for smoke damage?

A. No, sir, all the traveling I do is for my own business, collecting principally.

Q. You are a merchant. Don't that confine you pretty close to the store?

A. No, for I have business, I keep a man hired and I have as much business on the outside of the store as I do inside.

Q. And in all these years, since these acid plants were put up, you have never been able to smell smoke, or see that smoke, or see the effect of it over there in your County?

A. I do not think I said I have not been able to smell smoke, but I said I had not seen any effect that I could say that it was the smoke over there in the country since the acid plants were installed.

Q. Have you smelled smoke over there since these acid plants were put up?

A. Yes, sir.

Q. When was that?

A. Well, I could not say, different times.

877 & 878 Q. When was the last time you smelled any of it?

Q. If I smelled it this year, I do not know. I think probably the last smoke I smelled was in February, probably.

Q. I will ask you if you were at home on June 8th, that was about last Monday a week ago?

A. Yes.

Q. Didn't you smell and see smoke in your community that day?

A. I do not think I did.

Q. Here is Isabella (indicating on map). You live away back down here?

A. This is Potato Creek. I live right here at Mineral Bluff, you see.

Q. You are right, I was wrong at that time.

A. Here is Potato Creek.

Q. Well, I was right, Mineral Bluff would be about where my hand is here, back down here?

A. Yes, this is about half way.

Q. Here is Epworth here, it is over in Fannin County?

A. This river after it comes across in Fannin County, makes a bend and runs back nearly north. I live over back here.

Q. Then, there is a big lot of hills between you and the Isabella plant?

A. There is one high ridge.

Q. One high ridge?

A. Yes, sir.

Q. And the river makes a bend through here, and if there was a big lot of smoke down that river, and back of that hill, it could not get across to you on the 8th of June?

A. Yes.

Q. If there has been any damage in that country in the last five or six years, as I understand you, you have not been able to see it?

A. Four or five years I have not seen it. I could not
879 say it was smoke, understand me.

Q. You won't say there was no damage done in North Georgia, will you?

A. No, I would not say that, but I do say I could distinguish it and know it was smoke damage. I would not say it was, or was not.

Q. Have you been on Platt Creek, east of Blue Ridge, and investigated the timber and vegetation there during the growing season in the last two years?

A. No, I have not been on the south side of Tococoa River and seen it.

Q. Have you been up to Dyal or Rocky Face Mountain facing back toward Ducktown and seen the smoke there in the last two or three years?

A. No.

Q. Have you been on the mountain, just here about immediately above Blue Ridge to observe the condition of vegetation there in the last two or three years?

A. I have not been on the Mountain, I have been on Blue Ridge, and rode out to Morgantown, I have not been in the woods. I have been on the public road mostly.

Q. I will ask you, Mr. Hampton, if it is not a fact that the smoke affects the timber worse in the top of the ridges and on the sides of the ridges that face towards the smoke stacks?

A. Certainly; when I find the effect, I find that it has affected it worse on the side facing the smoke.

Q. Have you not seen the smoke in that country, in Fannin County, this year?

A. I have seen smoke or something that looked like smoke, and I distinctly smelled the fumes in February, but I do not remember

whether I smelled it since that time or not, but I did sometime back in the early part of the Spring.

880 Q. Have not the winds been from the northwest, blowing into the southeast, and over Georgia from the direction of these plants more this spring than most any year?

A. No. In fact, we have not had much wind up there, that is, this Spring, six weeks we had a drouth, and scarcely had any wind.

Q. The breeze, has not the breeze been from the northwest more than usual?

A. Yes, we had a lot more wind out of the north than usual, especially back in the Spring.

Q. Have not you seen more smoke coming from that country over the hills, than you have seen in years, this Spring?

A. No, sir.

Q. Have you been a witness before in these cases?

A. No, sir.

Redirect examination.

Questions by J. A. FOWLER:

Q. Mr. Hampton, he asked you if you smelled smoke, if you saw smoke, have you not smelled smoke since you have been in Chattanooga?

A. I cannot say whether I have or not.

Q. Is it anything unusual to smell smoke around any kind of a factory?

A. No, sir.

Q. Since these acid plants have been operating, is there anything in the smoke which makes you cough like it used to?

A. No, sir, there is nothing.

Q. There is one matter I forgot to ask you about. State whether or not you were asked to put in any claim with reference to damages to your crop?

A. Yes, sir, when those men were adjusting the damages.

Mr. DRAKE: We except to that as being irrelevant, incom-
881 petent and in no way illustrating the issues in this case.

Exception overruled, appeal taken.

Mr. FOWLER: Go ahead.

WITNESS: Shall I answer the question.

Mr. FOWLER: Yes.

A. I was asked to put in a claim as I had accepted one of the blanks. I looked over my corn and looked over the blank and laid it aside, returned the blank to them. I did not want to put in any claim.

Mr. DRAKE: We except, for the same reasons.

Exception overruled, appeal taken.

Q. What year was that?

A. That was in 1903.

Recross-examination.

Questions by J. A. DRAKE:

Q. That smoke does not smell like any ordinary wood smoke, or coal smoke, does it?

A. No, sir, it does not smell like coal smoke. It smells like sulphur smoke.

Q. It has a peculiar, sulphur smell?

A. When it gets strong.

Q. I will ask you whether or not that is what you meant when you said you had smelled smoke in the last year or two, like you smelled sulphur.

A. Yes, I smelled sulphur. I have seen smoke when I could not smell.

Q. Smelled it when you could not see it, and saw it when you could not smell it?

A. Yes, sir.

Mr. FOWLER: Of course, there was no vegetation growing in February.

A. No, sir.

882 Further deponent saith not.

Sworn to before me, this — day of June, 1914.

—— ——.

The total distance covered by this witness from his home to the place of giving deposition was — miles, each direction.

883 W. T. S. DICKEY, the next witness, being first duly sworn, upon examination deposed as follows:

Direct examination.

By J. A. FOWLER, Esq.:

Q. 1. Where do you live?

A. I live at Mineral Bluff, Georgia?

Q. 2. The same place where Mr. Hampton lives?

A. Yes, sir.

Q. 3. What is your age?

A. Fifty-one.

Q. 4. What is your business?

A. Well, I have a small farm, and general contractor, one thing and another of that kind, and I own a farm, orchard land.

Q. 5. You were raised in and around Mineral Bluff?

A. Raised right in Mineral Bluff.

Q. 6. You have been there ever since the Tennessee Copper Company's plant was constructed, and the Ducktown plant also?

A. Yes sir.

Q. 7. Now, Mr. Dickey, do you remember about when that high stack was built at the Tennessee Copper Company's plant?

A. I do not.

Q. 8. Do you remember of its being built?
A. Yes, sir.
Q. 9. But you do not remember the exact year?
A. No, sir, I do not remember that.
Q. 10. Previous to the construction of that high stack was there any damage to the vegetation and crops up in that section of the country from smoke?
A. It was back about how many years?
Q. 11. Well, before 1906?
A. Before 1906, really I could not remember back that far, if the smoke was very bad.
Q. 12. After the construction of the stack, was the damage
884 very much?
A. The damage to vegetation, I don't know so well about when the stack was put up, but until they put up the acid plant there was a great deal damage from smoke.
Q. 13. Describe the nature of the damage?
A. Our timber, commencing with the foliage, it would be burnt along on the side of the mountain, and then it would get onto the vegetation and crops, more or less. You see the foliage on the timber on the side of the mountain would show it first, you see that all along on the timber.
Q. 14. What effect would it have on the leaves?
A. It would turn them brown and they would look like they had frost on them.
Q. 15. Would they fall off?
A. I suppose so. I never noticed so much, but it looks to me like they would fall.
Q. 16. Did any timber die from the effects of the smoke?
A. Yes, sir, I guess it did.
Q. 17. What was the effect on the crops?
A. On the crops at the time the smoke was doing the most damage?
Q. 18. Yes, during that time?
A. I do not know just how it would affect the crops, but it would injure the vegetation.
Q. 19. Would it have the same effect on the leaves, particularly the growing crops as it would have on the forests?
A. Yes, it would kinder scorch them.
Q. 20. Could you smell the smoke?
A. Yes, yes.
Q. 21. What was the character of the odor?
A. Well, it smelled like that sulphuric acid plant, over there at the furnace, you know how it is there at the mines, it smells pretty strong sometimes around there.
Q. 22. Would it cause one to cough.
885 A. Not much, no sir, not that much. No, you could smell it though very perceptibly at that time.
Q. 23. You could tell the acid in the smoke by the smell?
A. Yes.
Q. 24. Mr. Dickey, you know the effects that it has?

A. Yes, sir.

Q. 25. You know the fact that those acid plants were installed in those furnaces?

A. Yes, sir.

Q. 26. Do you remember the years?

A. No, sir, I do not know that I do.

Q. 27. I wish you would describe what effect, if any, the smoke has on vegetation up in there, since these acid plants were installed and put into operation?

A. For the last two or three years, up there, according to my best observation of them questions up there, I cannot see that the Tennessee Copper Company, or other folks from anywhere down there is doing damage to vegetation around where I live, and I have observed this for the last three or four years.

Q. 28. Through what territory do you observe that?

A. Particularly over the ridge, up toward Murphy, by Granger and down the road to Atlanta, and down this way to Ducktown.

Q. 29. Have you been over a good part of the county?

A. No, not so much, I do not travel over the country so much, just occasionally on little short trips but my business does not call me out over the country.

Q. 30. Have you noticed any damage at all during this present season?

A. No, sir, I have not seen the leaves scorched in our country during the present summer.

Q. 31. During the present season has there been any smoke from these furnaces up in that section?

A. I think so, yes, sir.

886 Q. 32. Did you notice any last Monday a week ago?

A. I think I did. I do not remember the date. But it has been a week or ten days ago, something like that.

Q. 33. Was there enough of it to be unpleasant to you?

A. No, sir.

Q. 34. Did you notice any bad effects on the vegetation?

A. No, sir.

Q. 35. How about last year, did you notice any bad effects on the vegetation during any part of last year?

A. No, sir.

Q. 36. Was there any bad effects observable during year before last, that is, 1912?

A. Not that I remember.

Q. 37. Have you noticed much damage since the plants have been installed, the acid plants I refer to?

A. I could not say that I have, that I have noticed damage for the last three or four years. I do not remember particularly about those things.

Q. 38. State whether or not you have seen rye growing in your neighborhood during the present season?

A. Yes, sir, I have seen some rye growing in my neighborhood, noticed it two or three days ago.

Q. 39. What kind of a crop was it?

A. According to the land, it was the best I ever saw. The land is thin, and I thought it was the finest, and everybody as well, has remarked about it, and it is out in the edge of town.

Q. 40. Do you know whether or not rye is tender and susceptible to the acid poison?

A. I think it is. I think it is susceptible to poison at the time the blooms are on it. It used to be counted very detrimental.

Q. 41. You live south of east from these furnaces?

887 A. Yes, sir, a little bit.

Q. 42. A*b*d does the west—Do you have the west or northwest winds?

A. Yes, sir.

Q. 42. Did you see that corn crop of Mr. Eddington's?

A. No, sir, I did not see the corn crop growing. I saw him shipping off some samples. I know what he grew. I know he took the State premium and also the County premium for the most corn grown on an acre in Georgia.

Mr. DRAKE: We except to the answer as being irrelevant and immaterial and especially as to the taking of premiums, etc.

Exception overruled; appeal taken.

Q. 44. Do you know where this man lives, that raised that prize corn?

A. Yes, sir.

Q. 45. How far from where you live?

A. Four or five miles east.

Q. 46. Further east?

A. Southeast.

Q. 47. Then he is four or five miles further away from the furnaces than you?

A. Yes, sir.

Q. 48. State whether or not during the time—State whether or not before these acid plants were installed injury was done to vegetation around where you was, or beyond that?

A. I have been told that it extended in Union County at one time.

Q. 49. How far away was it injured then?

A. I have seen it up in Union County, that looked to me like it had been affected by smoke, according to my best observation, I was up there and it looked like to me that it had been affected by

888 smoke according to my best observation at that time.

Cross-examination.

By J. A. DRAKE, Esq.

Q. 1. This fellow, John Eddington, is the one that had the fine corn crop you spoke of?

A. No, sir, that was not his name.

Q. 2. What was his name?

A. I do not remember.

Q. 3. Where does he live?

A. He lives up near Morganton, four or five miles east of Mineral Bluff, his farm is near Morgan.

Q. 6. That is four miles further away from the place than where you live?

A. Yes, sir.

Q. 7. You live about ten miles I believe?

A. Yes, sir, nine or ten.

Q. 8. Then the fellow Eddington live seven beyond over some hills, does he not?

A. Yes, sir, hills all through there.

Q. 9. Is that in Union or Fannin County?

A. Fannin County.

Q. 10. Is that up near the edge of the County?

A. No, Mineral Bluff is about the center, and Morganton is about four miles east.

Q. 11. So I understand you then, you have traveled over the County of Fannin very extensively?

A. No, sir.

Q. 12. You have just made a few trips up and down the road?

A. Yes, sir.

Q. 13. Leading toward Murphy, North Carolina?

A. Yes, sir.

680 Q. 14. That is going away from the place, and down to Blue Ridge?

A. Yes, sir, Blue Ridge, and up to Dudleyana.

Q. 15. And if there has been any other damage in other parts of the County you do not know about that?

A. No, I could not say about that.

Q. 16. Have you been on Fox Creek? East of Ellijay,—Blue Ridge and through that country, the last two years?

A. No sir, I have not been there the last four or five years.

Q. 17. You have not been there for the last four or five years?

A. No, sir.

Q. 18. You have not made any investigation of them mountains and hills through there?

A. No sir.

Q. 19. Have you been on the hills above and around Blue Ridge to see the effects of smoke on corn and forest trees in the last few years?

A. Only in the town, what I can see me from the Town of Blue Ridge.

Q. 20. Would you swear, Mr. Dobbs, that there has been no vegetation or timber killed in and around Mineral Bluff in the last four or five years?

A. I will swear I have not noticed any.

Q. 21. You will not swear there has not been?

A. I will swear I have not noticed any.

Q. 22. Have you seen or smelt smoke in that neighborhood this spring?

Q. I have seen another house. I do not remember that I have to avoid any other house, have we have seen another in that.

Q. 61. I will ask you if it has not been in the [illegible] that Miss Miller said to the Vice-Chair counsel, [illegible] and [illegible] Miss Miller is not here to testify here that [illegible] public meetings and [illegible] was not aware of [illegible] at all to the [illegible] did not?

A. No, not that I know of. I have no knowledge of it.

Q. 62. Then every time the [illegible] has been invited there to the neighborhood?

A. I have not noticed the people there but I thought the public [illegible] the notice to come to this [illegible] a notice to publish.

Q. 63. Was notice given to you?

A. I do not remember about that.

Further deponent saith not.

[illegible]

Sworn to before me this [illegible] day of [illegible] 1951

[illegible]

The witness excused by the witness a call from the house to the place of giving his deposition and a call of 5:15 o'clock

(61) C. O. Mathews, the next witness being duly sworn, deposed as follows:

Direct examination

By C. A. Stevens

Q. 1. Where do you reside, Mr. Mathews?
A. Route 2, Cedar Springs
Q. 2. Your age?
A. Seventy [illegible]
Q. 3. How long have you lived here?
A. I have lived there seventeen [illegible]
Q. 4. Is that a [illegible] or just a [illegible]
A. (Interrupting) A farm.
Q. 5. How many acres do you have?
A. About 40 or 50 more [illegible] acres.
Q. 6. Is that in Union, one of your [illegible]?
A. No sir.
Q. 7. Have you noticed any change [illegible]?
A. Yes sir, the [illegible] A. C.
Q. 8. What is the principal industry around here, farming?
A. Farming.
Q. 9. What business are you engaged in?
A. I am engaged in the [illegible] business, [illegible] and trucking.
Q. 10. You are a merchant and farmer?
A. Yes sir.

Q. 11. And you handle fertilizer?
A. Yes, sir.
Q. 12. How large a section of country do you sell fertilizer in.
A. I sell in Fannin, Gilmer and Union Counties.
Q. 13. Fannin County lies right along the Tennessee line?
892 A. Yes, sir.
Q. 14. Where does Union County lie?
A. Union County lies rather east of Mineral Bluff?
Q. 15. Does it join on to Fannin County?
A. Yes sir.
Q. 16. And runs along the North Carolina line?
A. Yes, sir.
Q. 17. What is the other County you mentioned?
A. Gilmer.
Q. 18. Where is Gilmer County?
A. Gilmer County lies south of Fannin County, I think, rather south.
Q. 19. How far is Mineral Bluff from the Tennessee Copper Company's plant?
A. About eight miles.
Q. 20. How far from the Ducktown Copper Company's plant?
A. I suppose about nine miles.
Q. 21. And in what direction?
A. It is east.
Q. 22. South east.
A. Yes sir, south of east or southeast.
Q. 23. Now, do you remember of the character of stack the Tennessee Company elevated?
A. Yes, sir.
Q. 24. Do you remember what year that was done?
A. I think it was in 1907 or 1908, somewhere along there, I do not remember the date.
Q. 25. Now, after that was done what was the effect of this smoke on the forest or vegetation around in that section of the country?
A. It was very serious.
Q. 26. I wish you would describe what did occur?
A. Well, it occurred to affect the timber, vegetation and the
893 crops.
Q. 27. Had the vegetation been affected much prior to that time?
A. No, sir, not much.
Q. 28. Did you notice any at all, or did you notice it to some extent prior to that?
A. Well, I do not remember any before that.
Q. 29. Did it kill any timber?
A. Yes, sir.
Q. 30. What kind of timber principally did it kill?
A. Oak and pine. Oak principally.
Q. 31. What affect did it have on the growing crops?
A. Well, it had an affect on the crops, the stuff grown, wheat, oats, and fruit and corn.

Q. 32. Of course, it would not destroy the crops entirely?
A. No sir.
Q. 33. Did you,—Could you give any reasonable cause or guess to the extent of the injury, what per cent?
A. No, sir, I could not.
Q. 34. During that time were you selling fertilizer in that section of the country you mention?
A. Yes, sir.
Q. 35. Did you travel through a good part of these three counties you mention there?
A. Yes, sir.
Q. 36. Did you,—How wide a strip was that in which you traveled?
A. Well, it was supposed to be in the three counties.
Q. 37. Did you notice the crops in the three counties?
A. Yes, sir, from the reports of my first fertilizer customers.
Q. 38. Did you have reports from various parts of those three counties?
A. Yes, sir.
894 Q. 39. How far down in Gilmer County did the damage extend?
A. I suppose half of Gilmer County.
Q. 40. Now, in addition to your reports, did you travel in those counties to some extent yourself?
A. I did not travel myself, but my customers came to me for fertilizer.
Q. 41. State whether or not that was a matter that would be under discussion beween you and your customers?
A. Yes, sir, it would.
Q. 42. And would that, or not, arise out of the fact that it was injuring their crops and they were purchasing fertilizer for the crops?
A. Yes, sir.

Mr. DRAKE: We except to that as hearsay.
Exception overruled; and appeal taken.

Q. 43. Now, Mr. McNelley, you also remember the installation of those acid plants?
A. Yes sir.
Q. 44. Do you remember in what year that was done, or is there anything to call that to your attention?
A. I do not know, but it seems like it was in 1897 or 1898.
Q. 45. You mean in 1907 or 1908?
A. Yes, sir, that is right.
Q. 46. Did you notice any damage to the timber during the present season?
A. This year?
Q. 47. Arising from the smoke, yes.
A. No, sir.
Q. 48. Have you noticed any damage at all to the vegetation during the present season?

A. No sir.

Q. 49. Did you notice any damage arising to the timber during last season?

A. Yes, sir, a little bit.

Q. 50. Have you noticed any—when was that?

A. That was in July, I think July.

Q. 51. I wish you would state just what it was you did see at that time?

A. I noticed the leaves were a little bit brown on the timber, a little brown.

Q. 52. How many times did you notice that?

A. I noticed that several times.

Q. 53. What do you mean by several times?

A. Well, maybe one day and the next, just noticed the timber around at times.

Q. 54. From one day to the next?

A. Yes sir.

Q. 55. You noticed the smoke coming up there?

A. Yes, sir.

Q. 56. How many times did that occur during last season?

A. That occurred two or three times.

Q. 57. During the entire season?

A. Yes, sir.

Q. 58. And was that sufficient in amount to do any damage to the timber?

A. I do not think so.

Mr. DRAKE: I object to that question and answer as the answer is a conclusion without any facts to sustain it.

Exception overruled; appeal taken.

Q. 59. Did you notice any damage to the garden vegetation, fields or anything of that kind during last season?

A. No sir.

Q. 60. The season before, did you notice any damage to the timber or vegetation?

A. Yes, sir.

Q. 61. About what was the extent of that?

A. I don't know what extent it was, some little.

Q. 62. About similar to what you described as of last year?

A. Yes, sir.

Q. 63. About how often did that occur?

A. Well, it occurred some two or three times during the season.

Q. 64. Do you know whether or not that was sufficient to do any damage to the tim-er or was it just discernible on the leaves?

A. Yes, well, the leaves were burnt some, I do not think it did any damage to the timber.

Mr. DRAKE: Read that answer please.

(Answer read by stenographer.)

WITNESS: That is right.

Mr. DRAKE: I except to that on the grounds that it is a conclusion and the question was leading.

Exception overruled; appeal taken.

Q. 65. Then, Mr. McNelley, I wish you would tell us what the difference has been since the installation of these acid plants with reference to the effects of these fumes on the vegetation and timber up in your section of the country?

A. It has been considerable.

Q. 66. Is it better or worse?

A. Better.

Q. 67. Now, state whether or not the conditions you have described are typical of the various years since the installation of the acid plants?

A. Yes, sir.

Q. 68. Now, you say you sell fertilizer through certain counties there, those three counties you have mentioned?

A. Yes, sir.

Q. 69. And you travel over part of those counties?

897 A. Yes, sir, I did, but have agents through the different counties.

Q. 70. Since the installation of these acid plants what has been the effect with reference to the vegetation in the various localities in those counties with which you are familiar?

A. It has been better.

Q. 71. Is there any damage of any consequence,—Has any damage of any consequence been done by the smoke in any part of the counties where you have been?

A. There has been some damage in the last three years.

Q. 72. I wish you would describe what you have observed in the last three years, you say some little damage?

A. A little damage to the rye, a little to the wheat and a little to the fruit, and a little to the garden vegetables.

Q. 73. In what season of the year would that occur?

A. That occurred in the last three years.

Q. 74. I say in what season?

A. It was in 1913, 1912, and 1911, just a little.

Q. 75. You say just a little, do you mean it has been observable on the vegetation?

A. Just a little bit, yes sir.

Q. 76. To some extent on the leaves of the forest?

A. A little bit.

Q. 77. Do you know whether or not it was enough to any appreciable damage?

A. No, sir, I do not think so.

Q. 78. Do you know J. C. Addington?

A. Yes, sir.

Q. 79. Whereabouts does he live with reference to where you live?

A. He lives about five miles east of Mineral Bluff.

Q. 80. Do you know his place?

A. Yes, sir.

898 Q. 81. Is it on the river or on the hills?
A. No, sir, it is kinder in the mountain.
Q. 82. Did you see his corn crop?
A. No, sir.
Q. 83. State whether or not he won the premium, both for the State and County?
A. Yes, sir.

Mr. DRAKE: I except to that question and answer as irrelevant.
Exception overruled; appeal taken.

Q. 84. Did you see his corn?
A. I saw his corn as he went through Mineral Bluff.
Q. 85. What kind of corn was it?
A. It was fine corn.
Q. 86. Did you ever see anything finer?
A. No, sir.
Q. 87. Did you sell him the fertilizer with which he produced that crop?
A. Yes, sir.—Oh, I do not know whether he bought it all from me or not.

Mr. DRAKE: We except to that as being immaterial and irrelevant.
Exception — and appeal taken.

Q. 88. Did he grow that corn there?
A. Yes, sir, Mr. Addington brought his corn, his sample to Mineral Bluff and I had occasion to see it, and he asked me to look after it for him at the State Fair.
Q. 89. Mr. McNelley, state whether or not the last few years, crops have been better in your entire section of the country than they have for some time, then they ever were known to be?
A. Yes, sir.

By Mr. DRAKE: We except to the question and answer because the question is leading and the answer is a conclusion of the
899 witness.
Exception overruled and appeal taken.

Q. 90. How do you know that?
A. I know it by the amount of corn we had shipped in there.
Q. 91. You mean previous to this time?
A. Yes, sir. We had not had a bushel of western corn shipped in there this year. And I do not think we will have during this season.
Q. 92. Then do or not your people through that section make sufficient corn to supply them?
A. Since last year.
Q. 93. How is it with reference to the wheat crop?
A. The wheat crops are fine so far as I can see.
Q. 94. How has it been the last few years?
A. Well, it has been off.
Q. 95. Do you know anything else?
A. Nothing more than I am a farmer. I operate on about two

hundred acres of land at Mineral Bluff, east of Isabella, and I have gotten fine crops, the best crops I ever had, this year.

Q. 96. How were your crops last year?

A. They were not so good last year.

Q. 97. Was there any damage last year as a result of these copper fumes?

A. Well, a little damage.

Q. 98. What was that to?

A. Rye, fruit and corn.

Q. 99. How long have you owned that place?

A. Well, I guess thrity,—say forty years.

Q. 100. How were your crops last year compared with your crops, say fifteen years ago?

Mr. DRAKE: We except to that question for the reason
900 the answer should not illustrate anything in this lawsuit.

Exception overruled and appeal taken.

A. They are much better this year than they have been for some previous years.

Q. 101. Now, last year how did they compare with fifteen years ago?

A. They are better this year than last year.

Q. 102. I am asking about before the smoke in your country?

A. They are better this year than fifteen years ago.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 1. You say you saw damage to the crops last year?

A. A little bit.

Q. 2. And the year before that?

A. Yes.

Q. 3. How was it in 1911?

A. It was some worse.

Q. 4. How was it in 1910?

A. It was damaged pretty bad in that year.

Q. 5. Yes, a little worse then, and your corn, that is so fine this year, you mean that the prospects are fine, do you not?

A. Yes, sir.

Q. 6. It is not made yet?

A. No sir.

Q. 7. It is young yet?

A. On good land it is about waist high.

Q. 8. It has not tasseled yet, has it?

A. No sir.

Q. 9. I will ask you if the fumes on corn has—if the effect of fumes on corn is not worse about the time it tassels and silks
901 than any other time, if a bunch of smoke comes down on it during that time?

A. I believe it is.

Q. 10. You cannot tell them what kind of crop you will have this year at this time?

A. No sir.

Q. 11. I will ask you if the effect of that smoke on timber is not worse in July and August than in any other season of the year, and if that is not your experience?

A. No, sir, I think last year my recollection is it was in June and July?

Q. 12. That is the worst damage?

A. Yes, sir, to the timber and leaves.

Q. 13. I will ask you if the atmospheric conditions do not have something to do with the damage the smoke will do?

A. I suppose it does.

Q. 14. Have you been, in person, all about over North Georgia, and Fannin County, and Union County, to observe the effects of this smoke for the last four or five years?

A. Yes, sir.

Q. 15. You have seen damage in all of those years?

A. Yes, sir.

Q. 16. In various parts of North Georgia?

A. Yes, sir.

Q. 17. I will ask you if you have not seen a great deal of dead timber all through that country?

A. No, sir, not very much.

Q. 18. You have seen some?

A. Some.

Redirect examination.

By J. A. FOWLER, Esq.:

Q. 1. Did you, or not, say what you saw was some effects on the foliage?

A. That is all.

902 Q. 2. But whether it did any damage, I believe you said you thought probably it did not?

A. No, no, the foliage, that is all, on the foliage.

Q. 3. You saw dead timber everywhere, in all forests?

A. Yes, sir, that is right.

Q. 4. State whether or not, Mr. McNelley, you got some of the Tennessee Copper Company's money that was being paid under an agreement with the State of Georgia last year?

Mr. DRAKE: We except to that question and answer as being irrelevant.

Exception overruled and appeal taken.

Q. 5. How much did you get?

A. My recollection about $40.00.

Q. 6. Was that for all the damages that occurred on your two hundred acres of land?

A. Yes, sir.

Q. 7. State why it was you filed your claim?

Mr. DRAKE: We except to that question.

Exception overruled and appeal taken.

A. They proposed to pay damages to Union, Towns and Fannin Counties. I made a claim on my behalf for the grain, the fruit and vegetables and other things for last year.
Q. 8. Did you file it with the commission?
A. Yes, sir.
Q. 9. The arbitrators allowed it after investigation?
A. Yes sir, it was allowed.
Q. 10. Did you bring suit first?
A. No, sir.

Mr. DRAKE: We except to the answer as being irrelevant and immaterial and all other questions and answers on that subject, for the same reasons.

Further deponent saith not.

903 Sworn to before me this 19th day of June, 1914.

Clerk & Master.

The distance traveled by this witness to and from his home to the place of taking deposition was 274 miles.

TOM CURTIS, the next witness, being first duly sworn, deposed as follows:

Direct examination.

By J. A. FOWLER, Esq.:

Q. 1. What is your age, Mr. Curtis?
A. I will be forty-seven years old the 28th day of October. I was born in '67, two years after the war.
Q. 2. Where do you live?
A. I live in about a mile and a half of Mineral Bluff.
Q. 3. In Georgia?
A. Yes, sir, Fannin Co*u*n*t*y.
Q. 4. How far from the Tennessee line?
A. How far from the Tennessee line?
Q. 5. Yes.
A. Why, I think it is about, from where I live, it is about, they call it, I think, ten miles from the Bluff, and where I live it is about a mile and a half above town.
Q. 6. You are a mile and a half north of Mineral Bluff?
A. Yes, sir, I live right above town.
Q. 7. That is west?
A. Yes, sir, it is west,—I live up east of town.
Q. 8. Did you or not live over there,—Do you or not live further away from the Tennessee Copper Company's plant, and the
904 Isabella plant, than Mineral Bluff?
A. Yes, sir,—How is that?
Q. 9. Do you or not live further from the Tennessee Copper Company's plant and the Isabella plant, than Mineral Bluff?

A. Yes sir, a mile and a half further, it is about a mile and a half up there.

Q. 10. Are you a farmer?

A. Yes sir, I farm.

Q. 11. How much do you farm?

A. I have got in about thirty-five acres in corn this year.

Q. 12. How long have you farmed?

A. I have been at it all my life, in fact, I never have been,—have never missed making a crop since I was old enough to work.

Q. 13. About that tall smoke sta*kc*,—after that tall smoke stack was built to the Tennessee Copper Company's plant, what was the effect on the vegetation?

A. Before the stack was built?

Q. 14. I mean after the stack was built, and before the acid plant was put in?

A. It was pretty bad, at times it was.

Q. 15. Describe what effect it had on this country, on vegetation?

A. Well, it is like this, I would not, I could not tell, about how much effect it did have, I think you know at times.

Q. 16. What was the effect on the trees?

A. Why, there was a good deal of leaves killed and some timber killed through that country, and we thought the smoke done it.

Q. 17. Had anything of the kind occurred previous to
905 that time?

A. Why, it has been getting better for the last three years.

Q. 18. I am not talking about that now. I say before that stack was built, had timber been killed that way?

A. I suppose so. Yes, all the way up to the plant, all the way up through that country it had.

Q. 19. What I say, is, before that stack was built had timber been killed through there before that stack was put in?

A. I think so.

Q. 20. You know of the fact that it was put in there?

A. Yes sir.

Q. 21. But you do not know the year?

A. It has been getting better on us people up there about three years, we have been improving the country about three years, it has not been so bad.

Q. 22. Have you noticed any damage this year at all?

A. Well, I could not tell about that, though I do not think so. There has come in smoke there several different times on our stuff this Spring.

Q. 23. Do you remember at what date?

A. I think it come in about the 6th and 7th of June, the last week in May, court week, there was some.

Q. 24. You mean last Monday a week ago, was that when it was?

A. I think there was some smoke in about last week, I do remember. I do not pay much attention to it like a heap of fellows, I am at work farming.

Q. 25. Was there any damage to vegetation, in there last year?

A. Last year, well, I could not tell about that. It looked like the stuff was damaged some little.

Q. 26. Did you file a claim with the commission?

906 A. Yes, sir, I did.

Q. 27. How much did you get?

A. $40.00 out of it.

Mr. DRAKE: We object to that as being irrelevant and incompetent.

Exception overruled and appear taken.

Q. 28. How was it the year before?

A. The year before?

Q. 29. Yes.

A. Well, we made fair crops out there.

Q. 30. State whether or not your crops last year were as good as they were fifteen or twenty years ago?

A. That is further back that I would want to say.

Q. 31. Are you running a thrashing machine?

A. Yes.

Q. 32. How long have you been running it?

A. Well, I have been helping thrash ever since I was big enough, ever since I was a boy.

Q. 33. Through what parts of Georgia have you been threshing?

A. I have been through in Fannin County, and plum through to North Carolina, and up here in Cherokee County, all away around down towards Ellijay and back around.

Q. 34. Have you not thrashed all around over Fannin County?

A. Have I thrashed over all?

Q. 35. Yes.

A. What did you say?

Q. 36. Did you thrash over Fannin County last year?

A. Some of it, I did not thrash over. I did not thrash over as much territory as I have heretofore, I have not for three years.

907 Q. 37. In going around with the thrashing machine you observed the crops as well as other crops?

A. How?

Q. 38. I say in going around with the thrashing machine you observed the other crops as well as the wheat crop, that is, you noticed the corn crops and oat crops?

A. Yes sir.

Q. 39. You thrashed both oats and wheat?

A. Yes sir, they do not raise as much oats, and have not for several years, just wheat and rye.

Q. 40. State how the crops have been in North Georgia for the last three years?

A. Well, for the last three years I have thrashed more, we have three machines in there, and in about a mile and a half apart, three machines, three miles to four miles apart, I think there is about five in that district, we divide up the neighborhood around there.

Q. 41. I am asking—How have the crops been in that section in the last two or three years?

A. The wjeat and rye?

Q. 42. Yes.

A. It is better, there was a yonder more than there was in my young days, when we first set in to thrashing we run from six to seven thousand bushels with our machine around there, and I reckon the others thrashed about the same, at least they told us that tale, you know.

Q. 43. State whether or not you have ever known the wheat crops to be better?

A. No, sir, I do not think there was. There was a lot more corn raised than in my young days, when I was young.

Q. 44. What about the crops of rye in the last two or three years?

908 A. They have been good.

Q. 45. Did you ever know them to be better in the history of North Georgia?

A. No, sir, I do not think so.

Q. 46. How about your corn crop?

A. It is pretty fair.

Q. 47. Has there ever been a better one in the history of North Georgia, when there has been more corn, and other grains raised in the last two or three years?

A. No, I do not believe so. The people are farming better than they did several years ago, from what a man sees.

Q. 48. And they are raising more corn?

A. Yes, sir.

Q. 49. They are not supporting themselves principally and do not have so much grain shipped in?

A. I do not know so, but the merchants all tell me that they do.

Q. 50. The merchants also buy corn and ship it out?

A. Yes, they buy corn, I do not think we will have to have any corn shipped there at all this year, from the looks of things. I think we have never had so a good crop. There is a great deal of corn around among the merchants.

Q. 51. Do you know Mr. Addin-ton, J. C. Addington, who made the big crop?

A. Yes sir. I have known him ever since he was a boy.

Q. 52. You know his corn crop?

A. I have passed there but never did see it.

Q. 53. Did you see his corn?

A. No, I never did go to see it. He tried to get me to.

Q. 54. You know he took the premium for having the

909 best corn in the State?

A. That is what they say.

Mr. DRAKE: We except to that because hearsay.

Exception overruled and appeal taken.

Q. 55. How far is his farm from you?

A. About five miles.
Q. 56. Is he further east?
A. Yes, it is laying east from me further that way.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 1. They damaged you pretty badly last year, didn't they, Mr. Curtis?
A. Well, some, a man could not tell, I mean exactly enough to estimate, I just left it to them arbitrators.
Q. 2. You took them out to see it, didn't you?
A. To examine it.
Q. 3. You could smell the smoke and see it couldn't you?
A. Sometimes.
Q. 4. It smells like sulphur smoke, don't it?
A. I suppose so.
Q. 5. And it bites or burns the leaves something like frost, you have seen that effect, and you have just described it, I believe?
A. It does. It did not injure the timber up there last year.
Q. 6. Did the crops, you saw the effect on the crops?
A. Yes sir, I think I did.
Q. 7. You know the effects of it?
910 A. Sometimes.
Q. 8. You say you raise a great deal more corn than you did before?
Q. 9. There is a great deal more fields in than there used to be?
A. Yes, and people are getting better places.
Q. 10. A great deal more land is cleared?
A. Yes.
Q. 11. And they have better tools?
A. Yes sir.
Q. 12. And they break the land better and prepare it and farm better?
A. Yes sir.
Q. 13. And they also use fertilizers?
A. Yes sir.
Q. 14. And then the smoke comes over and burns your crops after all these improved methods applied to the farm, and you can see the effects and damages, you saw it and filed a claim and got damages?
A. Yes, a little.
Q. 15. The smoke was pretty bad back along about 1910?
A. I think so, yes sir.
Q. 16. Worse then than this year?
A. 1910?
Q. 17. Yes.
A. I suppose so.
Q. 18. And was a heap worse in 1911 than it was in 1914?
A. I think so, for the last four years it has been improving.

Q. 19. It improved all along, back then it done a lot of damage in 1910?

A. Yes, it did.

911 Q. 20. Anybody could see the effects of it on the forest and timber *and* in 1910 and 1911, couldn't they?

A. Yes.

Q. 21. I believe you told Mr. Fowler, on your original examination about June 6th or 7th of this year there was a great deal of smoke to be observed in there?

A. I think it come up then yes.

Q. 22. Could you smell it?

A. Well, I could smell a little, but not strong like it was three or four years ago.

Q. 23. It was not as strong as it was in 1910 and 1911?

A. No.

Q. 24. You could see it, but could you see it as you could in 1910 and 1911?

A. No.

Q. 25. Now, about the crops this year, you cannot tell about what corn is going to do this year?

A. I cannot, it is pretty, now.

Q. 26. It is pretty now, But I will ask you if it is not a fact that the smoke damage is not more detrimental to corn when it — tasseling and silking than any other time——

A. I suppose so; it is decided among the farming class of people that it does.

Q. 27. Is not that the reason they don't raise oats in that section, because — the smoke, and because the smoke hurts it worse than anything?

A. I think it does get it worse.

Q. 28. They used to raise it there?

A. Yes, they used to, but about when I was a boy.

Q. 29. Quit raising them now?

A. Yes, I don't thrash enough to mention.

Q. 30. You don't know yet whether you are going to get any of the Tennessee Copper Company's money or not?

912 A. I do not.

Q. 31. You have not made up your mind whether you will file a claim?

A. If they award damages in there, it is just up to them whether we will get any or not.

Further Deponent Saith Not.

Sworn to before me this 19th day of June, 1914.

____ ____,

Clerk & Master.

The distance traveled by this witness to and from his home to the point of taking depositions and return was a total of 276 miles, or 138 miles each way.

913 P. F. WILLIAMS, the next witness, first being duly sworn, deposed as follows:

Direct examination.

By J. A. FOWLER, Esq.:

Q. 1. Where do you live, Mr. Williams?
A. I live up above Mineral Bluff in Fannin County.
Q. 2. Do you live near Mr. Curtis?
A. Yes sir, about a mile.
Q. 3. How old are you?
A. How old am I?
Q. 4. Yes.
A. Fifty one years old.
Q. 5. How long have you lived up there?
A. I have lived up in that section all my life.
Q. 6. Are you a farmer?
A. Yes.
Q. 7. Have you been farming all your life?
A. Yes.
Q. 8. Do you own a farm up there?
A. Yes.
Q. 9. How much?
A. About a hundred and fifty acres.
Q. 10. What do you cultivate on that land?
A. Corn and wheat and rye.
Q. 11. Do you raise any oats?
A. No sir, I quit that.
Q. 12. You quit raising oats, not enough money in it?
A. The last time I sowed, I sowed it with grass and when I got my stand of grass it was in meadow, I never sowed any more oats.

914 Q. 13. Now, Mr. Williams, what effect did the fumes have on the vegetation and crops in your neighborhood, in a few years after this high stack was put up by the Tennessee Company?
A. It had the usual effect on it.
Q. 14. Tell what the usual effect is?
A. The leaves about on the timber was killed.
Q. 15. Did it kill any timber?
A. Yes.
Q. 16. Did it hurt the crops?
A. I suppose it did, the tassels were killed.
Q. 17. You mean to the corn?
A. Yes sir.
Q. 18. You still raise corn?
A. Yes.
Q. 19. What kind of corn would it grow when the tassels were hit?
A. The corn would be small and chaffy.
Q. 20. The ears would be small?
A. Yes.
Q. 21. Did the sun seem to have any effect on the silks?
A. The silks would burn up, dry up.

Q. 22. Now, have you noticed any damage in there this year?
A. No sir, I have not.
Q. 23. About through the forests, the leaves of the forests or vegetation, any damage there?
A. No sir, nothing only I saw apple trees, the fruit dropped of- of them.
Q. 24. Do you know what caused that?
A. No sir.
Q. 25. State whether or not you have had some heavy frosts up there this spring?
A. We had in May.
915 Q. 26. The apples have dropped off?
A. Yes.
Q. 27. What kind of season did you have up there?
A. A dry one.
Q. 28. Did you have a drought for about six weeks?
A. Yes sir, it came along in May.
Q. 29. Did you notice any signs of sulphur fumes on the leaves this year?
A. No sir, I have not.
Q. 30. Did you or not undertake to suggest that these apples fell off in consequence of sulphur fumes?
A. I do not know what caused it.
Q. 31. You did have late frosts?
A. We had smoke come down in the coves, and after that the fruit dropped off.
Q. 32. After that came down in the coves did you see any leaves dried up by the smoke?
A. On the irish potato tops, some like them were scorched, I do not know whether it was dry weather or smoke.
Q. 33. That was all you did notice, on the potato leaves and the irish potatoes?
A. Yes sir, this year.
Q. 34. How was it last year?
A. Along in the fall some late stuff dried up, corn tassels was all I saw last year.
Q. 35. What sort of corn did you have last year?
A. Why, mine was pretty chaffy.
Q. 36. Now, when you speak about it being chaffy, what do you mean?
A. What I call chaffy is when it is loose on the cob, it got ripe too quick.
Q. 37. Did it have a good sized ear?
A. Yes.
916 Q. 38. How far do you live from that fellow Addington that won the premium for the State and County?
A. Which, around, or air course, you mean?
Q. 39. Yes, the air course.
A. Well, three miles or three miles and a half.
Q. 40. Did you see his crop?

A. No, sir, I never went to see it. I aimed to go but did not get to go. I heard so much talk of it.
Q. 41. Did you raise any wheat last year?
A. Yes sir.
Q. 42. Did you have a good crop?
A. A pretty good crop.
Q. 43. Did you raise any rye?
A. Yes.
Q. 44. Did you have a pretty good crop of rye?
A. Yes sir, a tolerable good one.
Q. 45. Did you make anything like what your wheat and rye crop was the year before, 1912?
A. Well, I believe my crop was a little better last year, than the year before.
Q. 46. For the last few years, three or four years, have you noticed any effect on the leavew of the forests?
A. No sir, for about three years I have not noticed much. Not as bad as it was before.
Q. 47. Well, is there any comparison now to what it was before?
A. No sir.

By Mr. DRAKE: We object to that question and answer as being suggestive of the answer and the answer is a conclusion of the witness.
Exception overruled and appeal taken.

917 Q. 48. Speaking about your tassels drying up last year, did you or not have a dry season?
A. I don't hardly know, I cannot recollect hiw the season was last year.
Q. 49. Is it not a matter of fact that the fall season came on very early and it was very dry last year?
A. I do not recollect.
Q. 50. Did you file any claim to get any part of the Tennessee Copper Company's money last year?
A. Yes sir, I put in a little claim with the rest of them.
Q. 51. How much did you get?
A. I got twenty five dollars.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 1. Mr. Williams, you were asked about last year, if there was a drought; I will ask you if last year was not the best corn crop in Georgia in the history of the state?
A. Well, take it all over, yes, it was, that is the report.
Q. 2. And your corn tassels, they burnt up in July you say?
A. Yes sir.
Q. 3. I will ask you what the effect of smoke is on the tassels?
A. It dries them up.
Q. 4. What color did it turn them?
A. A sort of yellow.
Q. 5. What effect did it have on the silks?

A. It dried them up, looked like it was frosted.

Q. 6. Before they ought to die?

918 A. Yes sir, before they ought to die.

Q. 7. That is what you think made your corn chaffy, as you have described?

A. Yes sir.

Q. 8. How many times last year did you see that smoke down in there?

A. I could not say.

Q. 9. A great many times?

A. I do not know, I did not watch the smoke.

Q. 10. Was it few or many times last year?

A. It was not many times last year.

Q. 11. When it did come, could you smell it?

A. Yes sir.

Q. 12. Could you see it?

A. I could see the smoke down in there.

Q. 13. Talk a little louder.

A. Yes sir, I could see the blue smoke.

Q. 14. This year, how many times have you seen and smelt the smoke down in there?

A. I do not know, I have not paid any attention to it.

Q. 15. About how many times?

A. About two or three times, I reckon.

Q. 16. I will ask you if on Last Monday a week ago I think that was June 8th, 7th or 8th, along there, if the smoke was not down in that neighborhood pretty bad?

A. I do not recollect, I never paid any attention to it only when I smelt it strong.

Q. 17. You do not remember that?

A. No sir, I do not, I am up there in a little cove.

Q. 18. You say it is better than it was several years ago?

919 A. Yes sir.

Q. 19. I will ask you if it was worse in 1912 than it was in 1913?

A. Yes sir.

Q. 20. And I will ask you if it was not worse in 1913 than it was in 1914?

A. I do not recollect, I know it is not as bad as it used to be.

Q. 21. That is all you know, that it is not as bad as it used to be, I will ask you if it was not very bad in 1910 and 1911?

A. I do not recollect how that was. I know it is not as bad as it used to be.

Q. 22. That is all you can state?

A. That is all. I never paid any attention to it.

Q. 23. Did you observe much damage to the timber in 1912, did you detect where it burnt the leaves?

A. No sir.

Q. 24. Did you observe much effects of it in 1910 and 1911 where it burnt the leaves?

A. I do not recollect.

Further Deponent Saith Not.

——— ———.

Sworn to before me this 19th day of June 1914 .

——— ———,
Clerk & Master.

The distance traveled by this witness from his home to the place of taking deposition and return was a total of 276 miles, or 138 miles in each direction.

920 T. A. BYERS, the next witness, having been duly sworn, deposed as follows:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. Where do you live?
A. I live three and one half miles east of Mineral Bluff, near Morgantown.
Q. 2. In Fannin County, Georgia?
A. Yes sir.
Q. 3. How long have you lived there?
A. I have — there all my life, except about a year or two, I worked in the mines.
Q. 4. How far do you live from Copperhill, Tennessee?
A. I suppose a direct course, it is ten or eleven miles.
Q. 5. You have lived there for several years last past, I believe?
A. Yes sir.
Q. 6. At the time the tall stack of the Tennessee Copper Company was put into place, did the fumes from that plant before they built the acid plant, affect the section or not?
A. Yes sir.
Q. 7. What effect did they have on your crops and the timber down through there when that stack was first put up?
A. In the timber, the leaves would crisp up on it, and turn brown.
Q. 8. After the acid plants were built and put into operation, then what happened?
921 A. Well, you could not see any sign of it now.
Q. 9. Is there any damage being done through your section?
A. No, sir.
Q. 10. Was there any damage being done down through your section?
A. Not in our section that I can tell, if there is any damage I cannot tell it.
Q. 11. What business are you engaged in?
A. Farming and truck farming.
Q. 12. What did you do with the trcuks you raise?
A. I haul it to Ducktown.

Q. 13. Do you sell it in the Ducktown section to the operatives and employees of the mines?

A. I sell to the merchants, sell to Mr. Quinn, at the Isabella Store and the Ducktown Store.

Q. 14. What do,——

Mr. DRAKE: I except to the question and answer as being irrelevant.

Q. 15. You haul your products over to the supply store in the vicinity of Isabella and Copperhill and sell them?

A. Yes sir.

Q. 16. For how many years have you been engaged in truck farming?

A. I have been engaged in it for about fifteen years except three years I quit farming and worked in the mines.

Q. 17. Have you been engaged in truck farming for the last four or five years?

A. Yes sir.

Q. 18. What character of garden vegetables do you grow?

922 A. I grow beans, onions, cabbage, peaches, beans and tomatoes.

Q. 19. How many acres did you have in cultivation as a truck farmer last year?

A. Well, I do not know exactly, I suppose about two acres, an acre and a half or two acres.

Q. 20. What did you realize from the products grown on that one to two acres last year?

Mr. DRAKE: We except to that question as the answer could not illustrate anything in this issue.

A. Me and my uncle worked together, and we realized, we did not keep any books, but we realized from five hundred to one thousand dollars.

Q. 21. Five hundred to one thousand dollars per acre?

A. No sir, for the two acres.

Q. 22. From the two acres you had in?

A. We don't keep any books, and cannot answer positively but we realized over five hundred dollars.

Q. 23. How many acres did you have in truck farming the year before?

A. About the same land, put in about the same amount.

Q. 24. What did you get in dollars and cents from that acre or two acres year before last?

A. I cannot answer that positively. We do not keep any books, and I cannot answer positively—about the same amount though I guess.

Q. 25. How many acres of land, or what quantity of land have you in cultivation this year?

A. We have about eight acres in corn and an acre and a half or two acres in truck.

Q. 26. Have you been hauling truck to the Ducktown
923 vicinity this year?

A. Yes, sir.

Q. 27. How many loads have you hauled this year?

A. I have hauled eight or nine loads, I am not sure which.

Q. 28. What do these loads yield?

A. They bring from fourteen to thirty dollars, I have sold stuff there that brought me forty five dollars a load, but not this year.

Mr. DRAKE: We except to that evidence as being irrelevant and incompetent.

Q. 29. What kins of products usually yield from fourteen to fifteen dollars a load?

A. Such as mustard, turnips, greens, turnips.

Q. 30. What kind of a laod would yield you thirty to thirty-five dollars?

A. Cabbage and beans and tomatoes.

Q. 31. You say these grow right around where you live?

A. I did not tell you about the tomatoes when you asked me a while ago. We make more off of our tomatoes than anything else we raise.

Q. 32. Has there been any damage done by smoke down in your section this year or last year?

A. Not that I can tell. People claim they have but I cannot see where it is damaged any.

Q. 33. Did you file any claim against the Tennessee Copper Company for damages?

A. No sir.

Q. 34. You do not claim that they are damaging you any?

A. No sir.

Q. 35. Which does the most damage to apples and crops, the smoke that comes down or the time they waste looking for smoke?

A. I think the people agitating the smoke question does more damage than the smoke does, that is my opinion.

924 Mr. DRAKE: We except to the question and answer as irrelevant.

Q. 36. They set around and talk about it?

A. Yes, sir.

Q. 37. These garden products you have been growing for these years past and hauling up to Ducktown, are they grown in glass and protected from the smoke?

A. No sir, they are grown in the open, only the plants they are forced under canvas, as a hotbed to protect them in the early spring.

Q. 38. That is what causes your plants to come up?

A. Bring them up early.

Q. 39. If the smoke could come down so as to do damage and do damage to people's timber and corn, state whether or not it would damage your products on your truck farm?

A. It looks to me like if it would damage one thing, it would damage another.

Mr. DRAKE: We except to that question and answer as being a conclusion of the witness, without facts stated to base it upon.

Exception overruled and appeal taken.

Q. 40. State whether or not tomato plants are most easily affected of all vegetables or vegetation?

A. I do not know.

Q. 41. You do not know what smoke affects first, what is the most tender?

A. No sir.

Q. 42. How close do you live to the man that took the premium for raising the largest quantity of corn on an acre in Georgia last year?

A. About three miles.

Q. 43. Do you know that man Addington, J. C. Addington?

A. Yes sir, I have known him all my life, went to school
925 with him.

Q. 44. State whether or not he took the premium both at the State Fair and the County Fair as having the bumper corn crop?

A. Well, he took the premium for having the best acre of corn in the State on Upland.

Q. 45. How much did he raise on that acre?

A. He raised 136 bushels and 42 pounds, I believe, 42 pounds or 52 pounds.

Q. 46. On upland?

A. Yes sir, on upland, and the poorest strip of country you ever saw, I wish you would go up and see it.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 1. This fellow Addington that you speak of, he lives over still further from the plant?

A. He lives a little further.

Q. 2. There is a big lot of hills and mountains between you and Addington?

A. No sir, not very many, it is a hilly country.

Q. 3. There is a big lot of hills, and does not the shape of the hills and mountains affect the way that smoke goes?

A. I do not know, you know the river runs up there, the Tocoa River, and it is supposed to follow that valley from the Tennessee plant up the river.

Q. 4. I mean in the neighborhood, one side of the hill around these plants be burned up and the opposite side there will be timber and growing vegetation, is not that a fact?

A. I cannot say, I will tell you I have not seen any sign of the smoke where I have been this year or last.

Q. 5. Will you please answer my question, Mr. Byers.

A. Well, give me the question again, I did not catch it.

(Question read.)

926 A. It is not that way since they built these acid plants. It used to be that way.

Q. 6. Don't you know right now that within a mile of Ducktown, that the sides of the hills next to these plants are burnt up, with nothing on them, and on the opposite sides they have some little gardens, started in the coves where the smoke cannot get to it?

A. I do not know, there is some little gardens there in about two or three hundred yards of the smelters, all right in there and along in two or three miles.

Q. 7. You do not know anything about any damage in that country in the last two or three years?

A. I cannot answer that.

Q. 8. If there has been any damage at all, you do not know it?

A. No sir.

Q. 9. You cannot see it anywhere?

A. No sir.

Q. 10. You make your living selling your stuff to these plants?

A. I make my living by farming and selling to these people down there.

Q. 11. Is it not a fact that coves of the mountains facing towards these plants, the smoke will come into them and settle and do more damage than it will in coves that face in an opposite direction?

A. I cannot tell you what it does.

Q. 12. Have you not observed that in your travels through that country?

A. No sir, not since these plants have been in operation.

Q. 13. Any time, I am talking about?

A. I have not observed it.

927 Q. 14. You never did observe it then. Have you seen smoke down in your neighborhood anytime this year?

A. Yes.

Q. 15. Have you smelled it, the acid smoke?

A. No sir.

Q. 16. Was it Ducktown smoke?

A. I cannot tell where it come from.

Q. 17. Where was it?

A. I do not know, it was down close in there.

Q. 18. You answered Mr. Miller a little while ago that you thought the people in North Georgia and in Fannin County did more damage by their talk and agitation that the smoke did. I want to ask you if you say all their complaints are unfounded?

A. Well, I am not going to answer that. I cannot answer that question.

Q. 19. Do you mean to say that your neighbors that claim damages for this smoke are putting up fraudulent clai-s and lying when they make these claims?

A. I do not believe there is ten per cent of them that will go on the stand and swear to them.

Q. 20. Answer my question, Please sir. Answer the question I asked you.

A. Let us have the question again.

(Question read.)

A. I think that is an unfair question. I am not supposed to answer that, am I obliged to.

Q. 21. I want you to answer the question?

A. They may think they are. I do not know what they think about it.

Q. 22. I am asking you if you think they are every one perpetrating a fraud and lying when they make these claims?

A. I think part of them are.

Q. 23. Now then do you know J. F. McNelley?

A. Yes sir.

928 Q. 24. Do you know Tom Curtis?

A. Yes sir.

Q. 25. Do you know T. F. Williams?

A. Yes sir.

Q. 26. Are they honest men, do you think?

A. Yes sir, I have nothing against them that I know of.

Q. 27. Would you say those men would put up a fraud on these companies in claiming damages?

A. I do not know whether they would or not.

Q. 28. If they are honest men do you think they would?

A. I do not think they would, if they were honest men, I do not think an honest man would.

Q. 29. If they collected damages off of the Tennessee Copper Company last year for damages to their crops, do you consider that they practiced fraud on that company?

A. Well, I think the way they looked at that, they looked at that, that the Tennessee Copper Company had to pay $16,000.00 which was to be divided up, and they thought they would get their part of it.

Q. 30. Please answer my question, Mr. Byers?

A. Let us have the question again.

Q. 31. Do you think that they perpetrated a fraud, or in other words, stole that money from that company, or from the State of Georgia, who held the funds?

A. No sir, I do not think they did.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 1. Do you think they took that money because it was floating around loose?

A. Yes sir, that is what I think.

Q. 2. The money was being given out and they thought

929 they would take part of it?

A. Yes sir.

Q. 3. Have you had occasion to pass through the territory that lies between Mineral Bluff section and Copperhill frequently?

A. I pass through there twice a week, Tuesdays and Thursdays.

Q. 4. Did you see the crops growing along the road, orchards and wood lands?

A. Yes sir.

Q. 5. If there is any substantial damahe being done to the territory between Mineral Bluff and Copperhill, I will ask you whether or not you would be bound to know it?
A. Yes sir, I would see it.

Mr. DRAKE: We except to that question on the ground that it is original testimony and should have been brought out in chief.

Further Deponent Saith Not.

——— ———.

Sworn to before me this — day of ——, 1914.

——— ———.

This witness' mileage is 280 miles.

930 C. G. BAUGH, the next witness, being first duly sworn, deposed as follows:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. Mr. Baugh, what official position, if any do you hold in Fannin County, Georgia?
A. I am County Surveyor.
Q. 2. How long have you lived in that County?
A. I have been living there forty years.
Q. 3. Are you engaged in any other business except that of surveying?
A. I inspect timber.
Q. 4. Have you or not been through that county doing surveying during the past four or five years?
A. Yes sir.
Q. 5. What portion of that county do you live in?
A. I live at Mineral Bluff, about the central portion?
Q. 6. Are you or not well acquainted with that section of the country that lies between Mineral Bliff and Ducktown, and also to the eastward and westward?
A. Yes sir.
Q. 7. For how many years have you been acquainted with that section?
A. I have been acquainted with it forty years.
Q. 8. Do you remember what effect, if any, the erection of the tall stack of the Tennessee Copper Company had on the growing vegetation, timber and gardens in your section?
A. Yes sir, it had a bad effect apparently so far as timber is concerned, and vegetation.

931 Q. 9. Was that condition varied in any way by the erection and installation of the sulphuric acid plants, by the two companies, the Tennessee and the Ducktown companies?
A. Yes sir.

Mr. DRAKE: We except to that answer as being a conclusion as being without facts stated on which to base it.
Exception overruled and appeal taken.

Q. 10. Now, state the facts on which to base it tell us the change in conditions since the acid plants were put into operation.

A. I cannot see that any serious damage is being done away from the mines since these plants have been put in, these acid plants.

Q. 11. Have you or not been into the mountains that forms the rim of the basin, known as the Ducktown Basin?

A. I have been all over that section more or less for the last twenty years.

Q. 12. Have you been on the sides of those mountains facing the Ducktown Basin?

A. Yes sir.

Q. 13. Have you had occasion to go into those mountains frequently?

A. Yes sir. I have been in the Pack Mountains, Frog Mountains and others recently.

Q. 14. Have you or not been through the timbered sections of the country known as the Cumberland Plateau?

A. Yes sir.

Q. 15. What counties?

A. Through Bledsoe, Van Buren, Grundy, Fentress and other counties, and I have noticed more dead and dying timber in that section than in our section.

932 Q. 16. Those counties you named, Bledsoe, Van Buren and others are in Tennessee?

A. Yes, sir.

Q. 17. Do they or not comprise large tracts of timbered lands?

A. Yes, sir.

Q. 18. Have you or not been in what is known as the Great Smoky Section of the country?

A. Yes, sir.

Q. 19. What territory, what state or what counties?

A. I have been in Swayne, North, Sevier counties, Tennessee, Munroe County.

Q. 20. Tennessee?

A. Yes, sir.

Q. 21. How did you find the death rate of timber in the Great Smoky Mountain ranges as compared with the North Georgia section lying contiguous to the Copperhill territory?

A. I noticed as much dead timber in that section as I did in this.

Mr. DRAKE: We except to that class of testimony as being irrelevant and incompetent and in no way illustrating the issues in this case.

Q. 22. I understand you have found as much dead timber in the Great Smoky Mountain section as you did in the North Georgia section?

A. Yes, sir.

Q. 23. How recently were you in the Great Smoky Mountains to take these observations?

A. I was there last year and the year *eb*fore. I have been there for several years, every year.

Q. 24. How recently were you in the Cumberland Plateau?

A. I was in the Cumberland Plateau in March?

933 Q. 25. Of this year?

A. Yes, sir.

Q. 26. Were there any sulphuric acid plants, or smelting operations, or other operations that would deal destruction to timber in the Cumberland Plateau of the Great Smoky Mountain sections?

A. No, sir.

Q. 27. It appeared to be just the normal death rate of timber?

A. Yes, sir, seems to be a great deal of dead timber.

Q. 28. What kind of crops are grown in your section of the country, and the section lying between you and Copperhill?

A. We are growing fairly good crops there, in fact I believe better than we did several years ago.

Q. 29. How does the quantity of corn raised down there now, compare with the quantity that was raised up to say five or six years ago?

A. There is more corn in the country now than there was five or six years ago, corn seems to be plentiful in the county, corn to sell.

Mr. DRAKE: We except to that answer as being a conclusion and being irrelevant.

Q. 30. Up to five or six years ago, where was the corn supply drawn from, did you grow enough to supply the demand in your section?

A. A few years ago the merchants bought more or less corn from a distance, now they get it from the country there is a great deal of corn in the county now, people are farming better and the land produces better results and we are fertilizing more and get our stuff in better cultivation.

Q. 31. You do not have to ship corn in from other states now?

A. No, sir.

933½ Q. 32. Do you know a man by the name of J. C. Addington?

A. Yes, sir, I know Addington.

Q. 33. How far does he live from you?

A. He lives about five miles east of us.

Q. 34. Do you know of his corn crop last year?

A. His corn crop?

Q. 35. Yes, what kind of corn crop last year did he have, what can you tell us about the corn crop last year, raised by this man Addington?

A. He got the premium from the State and County for the best corn, he growed 136 — and 58 pounds on one acre.

Q. 36. I show you a copy of Morris Fertilizer Company's 1914 Yearbook, is that booklet distributed pretty generally throughout your section, to the farmers?

A. Well, I could not say.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 1. Mr. Baugh, who was with you when you went over on these inspection tours on the Cumberland Plateau?

A. On the Cumberland Plateau?

Q. 2. In Fentress and those other counties?

A. Well, Mr. Wilson of West Virginia was with me in March, I was showing him some timber lands, M. M. Wilson of West Virginia.

Q. 3. What is his business?

A. He is a timber man, sawmill man.

Q. 4. What was your business, you say you were in that country?

A. I was showing him some timbered lands.

Q. 5. For whom?

A. I was showing him for myself.

Q. 6. Do you own timber there?

A. I have some, yes.

934 Q. 7. You have timber in all these various counties you mentioned?

A. Yes, sir, I have some options, yes, on the timber and I was showing it to him.

Q. 8. I will ask you if you had options on timber in all the counties you described there in your original examination?

A. Well, I was sent out to show these different counties.

Q. 9. You were sent out by whom?

A. Well, up in Sevier County, Tennessee, I was there about a year ago. I showed that to Babcock Lumber Company.

Q. 10. Answer the other question first, we want to get through.

A. Which question?

Q. 11. The question about being sent out yonder, who sent you out there and why were you there?

A. In Bledsoe County?

Q. 12. Yes, Overton and those counties you named in the Cumberland Plateau?

A. I was out in Van Buren and Grundy Counties, I went out there, I was showing a party from Pennsylvania a tract of 30,000 acres I have an option on from Mr. Potts of Chicago.

Q. 13. How many counties did you name a while ago that you had been in looking for timber?

A. I named Van Buren, Bledsoe and Fentress.

Q. 14. Were you through Cumberland County?

A. I went to Fentress I went to Morgan County, and come back, got off the train twenty five miles this side and drove through the country.

Q. 15. Have you got timber there also?

A. At that time I had an option on some timber land in Fentress County.

Q. 16. You were not down there to inspect smoke damage 935 and timber?

A. No, sir.

Q. 17. Or sent there by the copper companies?
A. No, sir.
Q. 18. In any of these counties, did you go out there at their instance?
A. No.
Q. 19. Have you ever been inspecting for them?
A. No, not in timber.
Q. 20. In timbers, or in any other way, have you worked for them?
A. I have never done any inspecting for them.
Q. 21. Have you worked for them in any capacity?
A. Well, I have done a little work.
Q. 22. What kind of work?
A. I got some information for them.
Q. 23. What kind of information?
A. About the North Georgia Realty Company, who they were.
Q. 24. Who the North Georgia Realty Company was?
A. Yes, sir.
Q. 25. That was a kind of detective work, wasn't it?
A. Well, it was to find out who they were.
Q. 26. How do you account for the dead timber in the Cumberland Plateau?
A. I am inclined to think insects got into the timber and killed it more or less.
Q. 27. You do not know it, do you?
A. Not positively.
Q. 28. You are no expert on that?
A. I have been looking over timber a long time. I can just tell when I look at the timber.
Q. 29. That was badly affected with worms?
936 A. All those sections are affected with dead timber, of course, there is a good deal of dead timber there.
Q. 30. It was very bad forest for dead timber.
A. A good deal of dead timber.
Q. 31. And it was worse than around Ducktown.
A. Yes, in that section there it is pretty bad.
Q. 32. It is pretty bad around Ducktown for dead timber?
A. Well, right around and aways it is a little bad.
Q. 33. Isn't it a fact, Mr. Baigh, that starting out from these copper companies plants that almost all of the timber is killed?
A. In a close-in radius, there is a little basin around where it is killed, of course.
Q. 34. I will ask you if, as you gradually go further and further away from these plants if conditions are not better as to the vegetation, trees and everything else?
A. Well, conditions as I stated are fairly good and in these mountains, east of the Ducktown Sulphur Copper and Iron Company's plant. They are pretty good in there.
Q. 35. Please answer the other question that I asked you, you know what I asked?
A. Well, there is some dead timber in there.

Q. 36. Please answer the question?

A. I believe it is a little better as you go west from the Tennessee Copper Company, you get back and I think the damage done in the section has been done by that high stack.

Q. 37. Please confine your answer to the question and answer it fully?

A. As I have before stated, I found dead timber in all section as I go west from the Tennessee Copper Company's plant, and when I get further back from them, I find lots of dead timber.

Q. 38. Don't you know what I mean by my question, Mr. Baugh?

937 A. Well, I am stating the facts as I see them.

Q. 39. Did you understand the question I asked you a moment ago?

A. Well, please state it again.

(Question read.)

A. The young vegetation and trees near the Ducktown Copper Company's plant is in as good condition as they are away from the plant.

Q. 40. Mr. Baugh, you can answer that question yes or no; please do so.

Mr. MILLER: I respectfully submit the witness has answered the question, a half dozen times, and he is not compelled to say yes or no; he simply gives the facts as I understand he believes them to be.

Mr. DRAKE: I respectfully insist that the question is one that can be answered directly and requires a direct answer, and the witness has evaded a direct answer in every way, and is not answering the question in any manner.

Mr. MILLER: I respectfully submit he has not evaded in any manner. You have a couple of stacks and ask about two plants and his answer about the two stacks and two plants, he could not say, as he says, yes to one and no to the other.

Q. 41. I will ask you the question again. Starting out from the Ducktown Copper Company's plant at Isabella, Tennessee, state whether or not the condition of timber and all vegetation improves as you go further away from that plant?

A. Well, the condition of the timber that is left, I am not going to evade the question now, the condition of the young timber that is left in the vicinity of that plant is good now, of course, there is some dead timber, but when you get in the Pack Mountains, three or four miles away, the timber is in good condition and has little dead timber, as any timbered section; But as I stated, when

938 you go west from the Tennessee Copper Company, there is a lot of dead timber, and when you get further back it is better.

Q. 42. Is there as much dead timber eight miles southeast from the Ducktown Copper Company as there is two miles southeast from the *it in the* State of Georgia?

A. If you will say three or four miles, there is as much three miles as there is in eight miles of the Ducktown company plant.

Q. 43. Is there as much in fifteen miles south as there is in seven and eight miles?

A. I believe there is.

Q. 44. Twenty miles down in Gilmer County, is there as much dead timber as there is in eight miles of the plant?

A. I believe there is.

Q. 45. Are you familiar with the Flat Creek country east of Blue Ridge?

A. Yes, I have been in the Flat Creek country.

Q. 47. When?

A. I was there in 1911 and I do not know whether I have been there since or not.

Q. 48. You do not know what the conditions are there now?

A. No, not to-day.

Q. 49. You know what I mean, last year or so.

A. No, I do not think I have been there in twelve months.

Q. 50. Do you know what the conditions are through that country in the last two years down around Whitepath and Cherrylog in Gilmer County?

A. I was down around Cherrylog country in there, five or six miles below Blue Ridge.

Q. 51. I mean in the growing season, have you been down there to observe the conditions?

939 A. Only on the train.

Q. 52. You do not know then what the conditions are then on top of the mountains east of Cherrylog?

A. I have not been in that section since 1911, I do not think.

Q. 53. And what I understand you to say now, is you have not seen any damage in the last few years where you have been in the North Georgia and Mineral Bluff section.

A. I have not seen damage that we would call damage from the Ducktown Copper Company's plant.

Q. 54. You know the effect of that smoke on leaves and the vegetation generally?

A. Well, a few years ago——

Q. 55. Answer the question, do you or not know the general effects on vegetation of this smoke?

A. Yes, sir, it crisps the leaves in some sections of the country.

Q. 56. Now, what does it do in other sections of the country?

A. I claim the Ducktown Copper Company's plant is not doing any damage.

Q. 57. That is just your conclusions?

A. I believe that.

Q. 58. You just believe that?

A. As I stated before I think it — being done by that tall stack.

Q. 59. That is a conclusion you have worked up for yourself?

A. No sir.

Q. 60. How do you get at it?

A. Because the tall—they do not condense all the smoke at the Tennessee Copper Company's plant and they do at Isabella.

940 Q. 61. You do not know anything about that do you?

A. I can tell the difference in the black smoke and yellow smoke—yellow smoke is condensed smoke, and black smoke is not.

Q. 62. Are you an expert chemist, or know anything about the smoke that comes out of these stacks?

A. No, I am not an expert, and do not claim to be.

Q. 63. Do you know anything about the amount of ores that are smelted at the Ducktown Copper Company?

A. I do not.

Q. 64. Do you know how much acid, and how much fumes they turn out?

A. I know they have a large plant there, but do not claim they are doing any damage.

Q. 65. Who does not claim it?

A. I do not claim it.

Q. 66. But you are just one, you draw that conclusion, as I understand, that the Tennessee company have a tall stack, that is the reason you draw that conclusion?

A. I do not draw the conclusion, that is what I believe.

Q. 67. What damage then, as I understand you to say, is being done, you believe the Tennessee Copper Company is doing it, and that is all you know about it?

A. That is what I believe.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 1. I will ask you to state whether or not your neighbors and citizens down through there, generally, hold the same belief as you do?

A. Quite a number of my neighbors have the same belief.

Mr. DRAKE: I except to that as being hearsay and irrelevant.

941 Exception overruled and appeal taken.

A. I own a farm in a mile of where I live, and have a nice garden where I live and I never have asked for damages never have put in any claim for damages and never expect to.

Mr. DRAKE: We except to all that answer as being irrelevant and offered gratuitiously.

Exception overruled and appeal taken.

Q. 2. Do you know this man, Mr. Byers, who has been a witness?

A. Yes sir.

Q. 3. Do you know what business he is engaged in?

A. He is a truck farmer?

Q. 4. How many other people in his immediate section or your immediate section are en-aged in truck farming?

A. Well, Mr. Wilson lives near him and two others, Mr. Reynolds and Mr. Heaton right above there.

Q. 5. Are they near Copperhill?
A. Yes sir, about twelve miles from Copperhill.
Q. 6. What do they do with *they do with* the truck they grow?
A. They sell it to the Ducktown and Copperhill market. Mr. Reynolds has quite a bank account, he has made from truck farming in the last few years.

Mr. DRAKE: We except to that answer as being irrelevant and immaterial and offered gratuitously by the witness.
Exception overruled and appeal taken.

Q. 7. Do you know anything about the sweet potato crops through your section?
A. It is fairly good potato country.
Q. 8. Did you have any forst through there during May of this year?
A. Yes sir, quite a lot of frost.
Q. 9. What effect did the frost have on apples?
942 A. It damaged the apples and peaches and caused them to fall, and other crops.

Further deponent saith not.

Sworn to before me this 19th day of June, 1914.

____ ____,
Clerk and Master.

The mileage of this witness from his home to the place of taking his deposition and return was a total of 272 miles or, —.

(The noon hour having arrived an adjournment was taken until 1:30 o'clock P. M. of this date, when the further taking of depositions in this cause will be resumed.)
(Pursuant to adjournment the further taking of deposition- in this case was resumed at 1:30 P. M. on this the 19th day of June, 1914, at the same place and in the presence of the same parties as heretofore stated.)

943 R. L. TURNER, the next witness, having been duly sworn, deposed as follows:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. How old are you, Mr. Turner?
A. I am forty four years old.
Q. 2. Where do you live?
A. I live a mile and a quarter east of Mineral Bluff in Fannin County.
Q. 3. How long have you lived there?
A. About nine years.
Q. 4. What business are you in?
A. I am a farmer.

Q. 5. Do you remember whether or not after the tall stack of the Tennessee Copper Company was erected that the fumes came oger on you people down there and affected your crops in any way?

A. Just after the stack was first put up, before they put the consumer in there the smoke condenser we were troubled a right smart with smoke, but since that time I cannot apprehend very much damage, occasionally we have some damage, although they use this condenser.

Q. 6. By the condenser you mean the acid plant?

A. Yes sir.

Q. 7. After the tall stack was erected and after the acid plant was put in you were damaged some?

A. Yes sir, we claim it was the smoke that done it.

Q. 8. And the average man down there, if there is anything happens to his corn or apples or any other product, he claims it was the smoke?

A. In a great many instances we do.

Mr. DRAKE: We object to that as being hearsay and irrele-
944 vant.

Exception overruled and appeal taken.

Q. 9. What business are you engaged in?

A. Farming.

Q. 10. What crops do you grow?

A. Irish potatoes, sweet potatoes, peas, corn, rye, wheat, cane, sugar cane, beans, cabbage, etc.

Q. 11. How long have you been engaged in farming down there?

A. Nineteen years.

Q. 12. How far east from Copperhill to where you live by the road?

A. It is counted eleven miles and a quarter.

Q. 13. By air line it would be closer of course?

A. Yes sir.

Q. 14. You say, since these acid plants have been put in operation you have not observed any damage of consequence?

A. Not very much, we see some that we claim is that. I cannot say myself that it really is. I do not reckon any other man could coje up and say it is, but we claim it is.

Q. 15. Whatever damage is done, they claim smoke does it?

A. Yes sir, they do.

Q. 16. What are the conditions of crops down there now?

A. So far as I have seen they are fair.

17. Have you had an unusual drought in that section?

A. Yes sir. Six weeks dry weather.

Q. 18. Did you have some heavy May frosts?

A. Yes sir, I think we did.

Q. 19. Do they usually affect the fruit crops, these frosts?

A. I suppose so, they kill it, they generally do.

945 Q. 20. Do they attribute that to smoke?

A. I would not be surprised if some do not, I would not say about that, though.

Mr. DRAKE: We except to that answer as a conclusion and immaterial and impertinent testimony.

Exception overruled and appeal taken.

Q. 21. Did you, or any of your neighbors put in a claim against the Tennessee Copper Company?

A. I think all put in damage claims for some amount.

Q. 22. Even you then claim to be damaged?

A. Yes sir.

Q. 23. Did that fellow, J. C. Addington, that raised the banner corn crop and got the State and County premium, put in a claim against the Tennessee Copper Company?

A. How?

Q. 24. I say did that man that raised the banner corn crop and took the premium for the State of Georgia put in a claim against the Tennessee Copper Company, also?

A. I couldn't tell you about —. I never heard anybody say.

Q. 25. You do not know whether he put in a claim or not?

A. No sir, I do not.

Q. 26. Has there been any damage to timber in recent years in your section?

A. Not that I noticed.

Q. 27. You own some timber there, do you not?

A. I have got about two hundred acres in timber, I have got about three hundred acres in all.

946 Cross-examination.

By J. A. DRAKE, Esq.:

Q. 1. I do not understand where you say you live?

A. I live one mile and a quarter east of Mineral Bluff.

Q. 2. You say there has been some damage there in the two or three years, what crops was affected?

A. Well, the apples,—the people claimed damages for them. If I was damaged at all, I was damaged in peas and corn.

Q. 3. Were you damage-?

A. I could not state positively, we had some severe storms, don't you know, and hails, which cut up the stuff considerably, but of course, I could not say which was the damage.

Q. 4. Did you see any smoke over in that section last year?

A. Yes sir we seen some smoke along about the 1st of August.

Q. 5. About the 1st of August?

A. Yes sir, last year.

Q. 6. Sometimes you could, and sometimes you could not, now, about the 1st of August that is about the time your corn was injured, it was in tassel and silk, wasn't it?

A. Yes sir.

Q. 7. I will ask you if that is not the time it hurts corn worse?

A. I suppose so.

Q. 8. You know Mr. Williams, do you not, who is a witness there today?

A. Yes sir, I know him.
Q. 9. Do you know about it coming down on his corn?
A. I do not know about it coming down on his corn.
Q. 10. And burning his tassels and silks black?
947 A. I know there was talk to that effect, I do not know how true that was.
Q. 11. You did not see it?
A. No sir, I did not.
Q. 12. Did you see Mr. Curtis' crop last year when it was damaged by smoke, who was a witness here to-day?
A. I never saw his crop, I do not know how bad it was damaged, it was like the other.
Q. 13. Was there not considerable damage in that neighborhood last year?
A. There was some claims, they generally claim that the smoke damaged it.
Q. 14. You did not see the effects of it?
A. I did not see it.
Q. 15. Why was it, if you were not damaged, that you put in a claim?
A. I put it in, and put it up to the arbitrators, for them to get at.
Q. 16. Why did you put in a claim when you were not damaged by the smoke?
A. I put it up to them like this, we had a chance to be damaged by the hail and by the smoke.
Q. 17. Didn't you have to say that you were damaged by this smoke, or else you would not, as an honest man, have claimed that damage?
A. Certainly, we thought it was that.
Q. 18. You were certain that the smoke damaged it, or you would not have put in this claim?
A. I put it up, as I told you to those arbitrators and let them settle it.
Q. 19. Don't you know that you made the statement to them and told them how that smoke had been down in there?
A. They asked me if I had seen smoke in there and I
948 told them I did.
Q. 20. Did you tell them you smelt it in there?
A. No sir, I did not.
Q. 21. Didn't you tell them it had damaged your crops?
A. I told them it was up to them.
Q. 22. Answer my question, did you not tell them that it had damaged your crops?
A. I don't know that they asked me that.
Q. 23. Didn't you accept thirty dollars on that arbitration report?
A. I accepted it.
Q. 24. They come over there and inspected the crop?
A. Yes.
Q. 25. They looked at it?
A. Yes.
Q. 26. How much did you put in your claim for?

A. I put in a claim for I think, for fifty some odd dollars.

Q. 27. You thought you were damaged that much?

A. Of course, I would not have put it in if I did not think it.

Q. 28. How many times have you seen and smelled smoke over in there this year?

A. Well, I do not know just how many times I have smelled it, maybe twice, or three or four times.

Q. 29. Three or four times, did you say?

A. Yes, possibly I have.

Q. 30. Do you remember about when those days were?

A. Well, I seen it down there in June, and on the 2nd day of June, and on the 5th day of June, and on the 7th day of June, and on the 13th day of June, we had some smoke.

Q. 31. Did you see any effects of that smoke on the irish potatoes and other crops?

949 A. We seen some leaves parched, I will state to you I saw that on the late potatoes. The early planting of potatoes I did not see any on them, but I saw some of it on some of the late planting, and these late plantings are parched, but our early planting was not parched. I have an idea, I think, it was caused by the dry weather.

Q. 32. And they were parched up on those days?

A. You could just barely tell a leaf now and then along in the vines was parched.

Q. 33. That was immediately after the smoke had been in there, that you saw this parched?

A. Yes sir, the smoke had attracted attention, the people. I saw several patches that had been attacked and that is the reason why I think it is mostly dry weather.

Q. 34. Do you know what effect that smoke has on them?

A. Yes sir.

Q. 35. Don't it leave it parched and burnt?

A. Yes sir, it leaves it parched and generally so, especially on ragweeds, all brown, when it comes through the neighborhood.

Q. 36. Mr. Turner, it would be mighty easy for you or for the arbitrators who come and inspect your crops to tell the difference between damage by the dry weather and the damage by smoke, wouldn't it?

A. Not at the season they come, it would not, of course, if they would come at the proper time, they could have maybe.

Q. 37. You saw it at the proper time?

A. I did.

Q. 38. And you saw this smoke?

A. No sir, I did not say that it was smoke, I said the damage was done, and put it up to the arbitrators, and told them that we had a hail storm, two storms along together.

950 Q. 39. Do you mean to say that you put in a claim for smoke damage when you did not know that it was smoke?

A. I told them how it was.

Q. 40. Do you mean to say that you put in a claim for smoke when you do not know whether it was the smoke or not?

A. I told them I put it up to them that we had a chance to be damaged by smoke and also a chance to be damaged by hail, and if you people want to pay, I will fill out the application blanks.

Q. 41. And you claimed you were damaged?

A. Yes sir.

Q. 42. Fifty odd dollars?

A. Yes sir, I put that in my statement.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 1. These arbitrators were not around until in September and corn gathering time, they did not come to look at it until after frost?

A. I had mine in the crib when they come.

Q. 2. You had your corn in the crib when they come to inspect your crop?

A. Yes, part of it.

Q. 3. And it was on that kind of arbitration that the company was supposed to spend its money?

A. Yes sir, I suppose so.

Q. 4. You say that the talk amongst your neighbors is, that there was some damage done?

A. Yes sir, in that part of the country.

Mr. DRAKE: We except to that question and answer as being irrelevant.

951 Exception overruled and appeal taken.

Q. 5. — one of your neighbors claims to have had damage by smoke, it spreads all around among the balance, don't it?

A. I could not say about that, sometimes the men do, and sometimes they don't.

Q. 6. It is a rather contageous complaint?

A. Yes sir. I should say it was, to tell the truth of it.

Q. 7. And dry weather, as I understand, will occasionally affect sweet potatoes in your section?

A. I never have heard of anybody claiming damage on his sweet potatoes from the fumes.

Q. 8. You have — heard anybody claim that but Mr. Drake——

Mr. DRAKE: You never have heard me make that claim about sweet potatoes.

Q. 9. (Continuing:) —by his questions?

Mr. DRAKE: I except to that question because I have never mentioned sweet potatoes in my examination in this lawsuit at all, and I do not know of them being referred to, I have not heard of it.

Mr. MILLER: If I misquoted you, Mr. Drake, I beg your pardon.

Q. 10. What kind of potatoes is that you referred to?

A. Irish potatoes.

Q. 11. Is it true that dry weather will affect Irish potatoes as well as anything else?

A. Certainly.

Q. 12. What was the conditions down there with your early planting and your recent planting of Irish potatoes?

A. The early ones kind of parched, but you could not tell
952 unless you would go in there and take a close look at them, and the others did.

Q. 13. That parching was drying by this extremely dry weather? and the heat, and the young potatoes that have come up more recently were not affected?

A. I did not see any on them.

Recross-examination.

By J. A. DRAKE, Esq.:

Q. 1. Mr. Turner, you say that your crop was in the crib when these arbitrators came down there?

A. Yes sir.

Q. 2. They *they* had no opportunity to investigage the crop while it was in the field, at the time the fumes came down on it?

A. Yes sir, they passed several times before I called them.

Q. 3. Did you not just tell them to go down and examine your crop, that it was in the crib?

A. I say that they passed along the public road, but I never made any complaint.

Q. 4. And is it not a fact that all the information or evidence that they had of smoke damage from your crop was what you gave them?

A. They had passed along the road and seen the crop, they passed and might have gone into it, I do not know, I was away from home some, but I noticed they did do some fellows that way.

Q. 5. They, you were mistaken, were you not, when you told Mr. Miller that they never saw your crop at all until it was in the crib?

A. No, I never said that they never saw my crop until it was in the crib. I said that they were passing one even-
953 ing and I asked them to come in, late one evening. They said it would be too late and was not worth while. I gave them all a chance that evening to take a look at it, and they just drove on.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 1. You say that the arbitrators never even inspected your corn at all?

A. If they looked at it, I do not know it. They passed along, and I asked them to come in and take a look at it, but after a few words they drove—.

Q. 2. They were driving through that country?

A. Yes sir, they were passing the road, they had passed up the road occasionally, and this was——

Q. 3. And this was after your corn was partially gathered?
A. Yes sir.
Q. 4. You invited them to come and look at your crop and they said they would come and do it later, and then sent you in a return that they had allowed you thirty dollars?
A. Yes, sir. They might have looked at it while I way away from home, they had chances to do so in passing.

Further Deponent Saith Not.

Sworn to before me this 18th day of June, 1914.

——— ———.

954 & 955 M. D. RICHARDS, the next witness called for defendant being first duly sworn, upon direct examination deposed as follows:

Direct examination.

Questions by W. B. MILLER:

Q. What is your age, Mr. Richards?
A. Thirty-two.
Q. Where do you live, sir?
A. I live at Copperhill; it is called Copperhill. I live on the Georgia side.
Q. What business are you engaged in?
A. A little grocery stand.
Q. Where did you live in the year 1913?
A. I lived in Fannin County, back up about six miles the other side of Mineral Bluff.
Q. How close did you live to J. C. Addington?
A. About one-half mile.
Q. Is that the man who raised the premium corn crop in Georgia last year?
A. Yes sir, I went to see it.
Q. You had occasion to see his corn crop, did you?
A. Yes sir.
Q. I show you a booklet that is issued by the Morris Fertilizer Company, which is a year book, for the year 1914, and direct your attention to the triplicate cuts one, two and three, appearing on page 13 of that book, and Mr. Addington's letter appearing on page 12, and will ask you if that is the same Mr. Addington to whom you refer?
A. That is the same man.
Q. I will get you to file that year book as exhibit one to your testimony.
956 Mr. DRAKE: We except to this exhibit for the reason that the photographs therein offered are not identified as being taken from the crop of this man Addington, whose name therein appears.
Exception overruled; appeal taken.

A. I do so.
Q. You lived there by Addington last year?
A. Yes, sir.
Q. Do the photographs shown in that book look like his corn crop while it was growing last season?
A. Yes, sir, it shows him. I think it looked better than the photographs. His corn looked better.
Q. His corn looked better than the photographs?
A. Yes, sir, some, it seems so to me, anyway.
Q. How long have you been living at Copperhill?
A. Well, I began in,—I lived in Copperhill—I have lived in Copperhill ever since about—twelve years ago until last year I moved out and stayed one year in the country.
Q. What did you do last year in the country?
A. I farmed.
Q. What character of crop did you raise last year?
A. I raised a fairly good crop; they said it was the best crop raised on the place.
Q. Well——

Mr. DRAKE: I except to the answer as being hearsay, and therefore incompetent.
Exception overruled, and appeal taken.

A. Well, I raised a good crop, say a good crop.
Q. How far were you from Copperhill by the road?
A. From Copperhill?
A. Yes?
957 A. I guess, take a direct course, it would be about twelve miles air line.
A. You lived in Fannin County, Georgia?
A. Yes, sir.
Q. What variety of corn did you grow last year, what kind of crop?
A. I growed corn, peas, beans, potatoes and garden truck.
Q. Have you lived in and around the Ducktown section sufficient to know when your crops and vegetables are damaged by sulphur smoke?
A. Yes, sir, I think so.
Q. State whether or not your crop, or your neighbors' crops were damaged in any way by the sulphur fumes last year?
A. I did not consider it so, dry weather damaged it a little, through that section.
Q. I will get you to state if you were back and forth to Copperhill last year through the forests, and along by the fields of your neighbors, and the people that lived between you and Copperhill?
A. Yes, sir.
Q. How did you find the forests and crops in that section, lying between you and Copperhill?
A. I found it reasonably good, like where it was at my place, all the way through.
Q. About the 8th day of this month, or about Monday a week

ago, I will get you to state if you know of anything being wrong with the acid plants, or converter, as it is called, of the Tennessee Copper Company, and if so, tell what you know about it.

A. I was down in the plant, and there was some gas turned loose, and they said it was the acid plant flue that goes to
958 the acid plant, something or another got wrong with it.

Mr. DRAKE: We except to that answer as being hearsay.

Exception overruled and appeal taken.

A. I could not say exactly what was wrong with the acid plant, because I did not go and make any examination.

Q. What were the conditions as to smoke, what happened when it was claimed something got wrong or out of condition with the plant?

A. The smoke come over reasonably strong where I was at, and also where I live up in Hoppertown, and my place of business down near the river, in Hoppertown.

Q. How far is your place of Business from the plant of the Tennessee Copper Company?

A. Not over a quarter of a mile.

Q. How far is your residence?

A. My residence is about a half mile.

Q. When you found the smoke coming out in your direction, what did you do, did you go up to the plant?

A. Well, I went to the plant both of those days, I went to the plant for this reason, to see a gentlemen that I heard was working there, that was owing me, and I was at the plant both days.

Q. What two days were they?

A. Last Monday and Tuesday a week ago, I do not remember the date, what date that would be, that was the days.

Q. That would be about the 8th and 9th of June. Today is the 19th of June?

A. Yes, sir.

Q. This is Friday, and you went there last Monday?

A. Yes, sir, and Tuesday was a week ago.

Q. What did you find when you went over to the plant of
959 the Tennessee Company, on those days, as to the operations that were being carried on, and the number of furnaces being operated?

A. I noticed there were four furnaces being run.

Q. How many of them were being run with green ores?

A. As much as a couple of them were being run with green ores. I noticed green ores going into a couple of the furnaces.

Q. And, have they an appliance there for working up the finer particles of ore they call cindering?

A. Yes, sir, they have a cindering plant there. I worked some time at the plant. It went up the flue, and I do not know what else they put with it, they work the flue dust, and blow it through the stack.

Q. Does that cincering process generate much or little sulphur smoke?

A. Some little bit of it, yes.
Q. Where does that smoke go to, is it conducted into the acid plant, or does it go out the top of the tall stack?
A. No, it goes out the top of the tall stack.
Q. Do you know why that is, why it does not reach the acid plant?
A. There is no way for it to get there.
Q. Does the smoke that is generated in that cindering process enter the smoke stack up higher than the flues that conduct the smoke into the converter or acid plant?
A. This cindering plant?
Q. Yes, tell us why it is that the smoke goes out of the top of the stack?
A. They roast this ore and the flue dust, and the gas goes out just as the smoke out of a high smokestack, there is a sheet iron smokestack that goes up in the air over there, and carries it up in the air.
960 Q. And it is not conducted into the acid plant at all?
A. No, sir, it is never connected with the acid plant.
Q. As I understand, that is separate from the furnace proper?
A. Yes, sir, that is away from the furnace, a separate business.
Q. How long had that cindering plant been in operating a week ago?
A. How long had it been?
Q. Yes. How long had it been continuously in operation?
A. No, I could not answer that, only by hearsay, I do not know anything about that, because I did not pay any attention to it.
Q. Did they, or not, shut down that cindering plant shortly after you were there?
A. Yes, sir.
Q. Do you know whether or not a part of the furnaces was banked also, shortly after you were there?
A. They claimed so, I do not know, I cannot answer if that was so, but they claim it was.
Q. After they stopped the cindering plant, and claimed to have banked a part of the furnaces, then what were the smoke conditions, did they get better, or not?
A. After they ceased the cindering and banked part of the furnaces, it was better. No gases going out that you could see, only Monday and Tuesday, those two days.

Cross-examination.

Questions by J. A. DRAKE:

961 Q. How old are you?
A. Thirty-two years old.
Q. And you live right there at Copperhill?
A. Yes sir, I live right there at Copperhill, all except until last year, when I moved out last year.
Q. For how long have you been living there?
A. Well, sir, I have been there, I was away a right smart, before

I married, I was boarding there, but I have lived right straight along after I married, I went there and got my wife.

Q. Have you worked there for these companies?

A. I never struck a lick for the Ducktown Copper Company in my life. I have worked for the Tennessee Copper Company, I guess, all together I was there about ten years, commencing when they first commenced roasting ores, and stayed until they quit, about three years ago.

Q. In what capacity did you work?

A. The first work I done there was driving a team before the furnace was built there, they were building, you know, constructing work, and such as that. I went driving a team, and from that I went to the roast yard when they began to haul wood to roast with, and worked at that until they ceased the roast pile, and then went to contract work with them, and from that I went to feeding the furnaces, pouring ore into the furnaces, and stayed on that some four or five years, I was on the feed floor, feeding the furnaces.

Q. You have never worked for the Ducktown Copper Company any?

A. No, sir, I never worked a day.

Q. You do not know their methods and practice of work there?

A. No, sir, not much about them at all.

Q. I will ask you if you can not see smoke boiling out of
962 the top of the stack there, Mr. Richards, at all times?

A. At all times, over at the Ducktown Copper Company's plant?

A. Yes, you can see smoke boiling out now, of course, yes, sir, condensed smoke, that big stack of the Tennessee Copper Company, it comes out like that.

Q. And then does it not come out also, the fumes, from the stack, and the gas all the time?

A. Over at the Ducktown Copper Company's plant?

Q. Yes.

A. I never saw it there much, that is, I am not much acquainted around there. I never did see any smoke coming from over that way. I have been around all those hills, but I never paid much attention to the situation and smokestack they have there, and I could not answer and tell you what kind of smoke stack they have.

Q. Then I understand you to say that if they are turning out smoke and gas over there, you do not know it, that is right?

A. No, sir, I do not know it, I cannot tell the effect of it.

Q. You do not know whether they are or not, you cannot see it?

A. No, sir.

Q. You have been over to see what kind of smoke stacks they have?

A. I have been around there a good many times, several times, but could not answer as to what kind of smoke stacks they have.

Q. Don't you also know that these companies run continuously, and never shut down unless they have a breakdown?

963 A. Yes, sir, I think so.

Q. Did you see any smoke damage over in Georgia last year?

A. Well, I could not say that I did. We had dry weather up there, and it seemed like everything burned up, but I think, well, it was the Ducktown Smoke doing it. I remember living over there in Cleveland in 1913, I have seen the garden truck and things in worse shape down in Cleveland than up there, so I decided we were not having much Ducktown smoke.

Q. I will ask you if the smoke did not come over in to Georgia last year, and you could see it and also smell it?

A. I could not say that, I could not say that I did. You look up into the air and see the blue looking smoke, and a lot of people might say it was smoke from Ducktown.

Q. Please answer my question, Mr. Richards, and don't be speculating about what we might do. State whether or not you saw that blue smoke in Georgia last year, and whether or not you smelled any of it over there?

A. No, sir, I cannot say I did.

Q. Can you say that you did not smell it?

A. No, if I smelled the Ducktown smoke around where I was living and up in there, I cannot remember it.

Q. I believe you say you were living up close to this man Addington?

A. Yes, sir.

Q. That had the fine corn last year?

A. Yes, sir.

Q. How far is that from the Ducktown Copper Company?

A. I would take it to be on an air line course, about twelve
964 miles; I do not know. I would take it to be that far.

Q. Would you swear there was no damage done in North Georgia last year, or year before last?

A. I will swear I never seen none to know.

Q. Well, that does not answer my question, does it, Mr. Richards?

A. Oh, well, I do not know, I could not say for sure. I was not all over North Georgia, but I did — any.

Q. You have not been over in that farming section this year, as you are in the mercantile business this year in town?

A. I was up there awhile, yes, a month, or somewheres about a month ago. I was up to see my father.

Q. I mean you have not been there to spend any length of time to observe conditions this year?

A. No, sir, I only passed up there on to my father's farm up in there. I was up in there for a couple of, or three days, I forget the amount, a couple or three days.

Q. That is all you have been up in that section?

A. Yes, sir, that is all I have been up in that section this year.

Q. That is all?

A. Yes, sir.

Redirect examination.

Questions by W. B. MILLER:

Q. If there is any damage done in the fields and forests, could a man find them in three days' travel around among them?
A. I do not think so.
Q. Don't you think you could find it in three days around
965 there?
A. No, sir.
Q. How far does your father live from Ducktown?
A. On an air line it is about twelve miles where I live, and he lives about a mile and a half beyond where I live, or about thirteen miles on an air line course.
Q. In going up there and returning, did you go through the country?
A. Yes, sir.
Q. Did you observe the crops and forest as you passed back and forth, and the orchards?
A. Yes, sir.
Q. Your father is a farmer?
A. Yes, sir.
Q. How many acres of land does he own up there?
A. I think he counts them about thirty acres of level bottom land, I could not tell you the amount of timber lands that he owns.
Q. Is your father engaged in farming?
A. Yes, sir.

Further deponent saith not.

——— ———.

Sworn to before me, this — day of June, 1914.

——— ———.

The total distance covered by this witness from his home to the place of giving deposition was two hundred and thirty-six miles, one hundred and eighteen miles in each direction.

966–969 W. G. PAYNE, the next witness, being first duly sworn, upon direct examination deposed as follows:

Direct examination.

Questions by W. B. MILLER:

Q. Where do you live, sir?
A. I live in Cherokee County, North Carolina.
Q. What portion of the County?
A. It is in the Southwest corner of the State.
Q. How long have you lived in Cherokee County?
A. Well, sir, I have lived there pretty much ever since I was four years old.
Q. Have you been Sheriff of that County?
A. Yes, sir.

Q. Have you represented the County in the Legislature of North Carolina?

A. Yes, sir.

Q. How long have you been acquainted with the section known as the Ducktown basin, where the Tennessee and Ducktown Company are now smelting copper ores?

A. Well, sir, ever since I can recollect, since a boy.

Q. Do you own any bodies of land in Cherokee County; if so, how much?

A. I own something over two thousand acres.

Q. How close do your lands extend to the plants of the Ducktown Copper Company?

A. There is one edge of the corner that is within three or four miles of Ducktown.

Q. Do you grow any crops on that land?

A. Yes, sir.

Q. What kind of crops?

A. Wheat, corn, rye, oats, potatoes, fruit and such other stuff.

970 Q. Have you any woodlands?

A. Yes, sir, I have several hundred acres of woodland.

Q. How long have you owned these farms and that immense acreage of land in North Carolina, Esquire?

A. Most of it I have owned from twenty to forty years.

Q. Have you been damaged in your crops or timber by the operation of either of the copper companies?

A. No, sir, I think not.

Q. You have not filed any claim against either of them?

A. No, sir, I think not.

A. You have not filed any claim against either of them?

A. No, sir.

Q. I will get you to state if you have been down in the North Georgia section of country, Esquire, that territory that lies South of Copperhill, and to the southeast and southwest, particularly in Fannin County?

A. Yes, sir, I have been in that portion of the country two or three trips.

Q. Probably how many days have you spent through there, on a trip?

A. Well, I should say I was out there on one trip, on a camp out there, on Frog Mountain, six, seven or eight days, I believe it was, and then I made another trip through there in 1911, I think it was, we started out and went through that section, and around up above Morgantown, and back to the North Carolina line over South of me. I forget how many days we stayed over in there that trip, and went on one or two other trips that I have been over there.

Q. Were all of these trips made within the last three years, Esquire?

A. Yes, sir.

971 Q. Were you and your party provided with horses on these trips?

A. Sir?

Q. Were you and your party provided with horses on these trips?
A. I was not, I had to furnish my own horse.
Q. I mean to say, you rode?
A. Yes, sir.
Q. Now, did you ride all the time, or what, and if not, why not?
A. Sir?
Q. Did you ride on horseback all day while making the trip?
A. No, sir, a part of the time it was so rough we could not ride, and part of the time we taken out afoot and left the horses.
Q. When you went out on these trips, were you out to ascertain the condition of crops and timber throughout that North Georgia Section?
A. Yes, that is what we were sent there for.
Q. Did you have any other object in view except to honestly ascertain, and truthfully report the facts?
A. No, sir, none in the world.
Q. Did you have any interest in the result of your report?
A. None whatever.
Q. Have you got any interest in the Ducktown Company?
A. None at all.
Q. Was Mr. Sherman Reese, who is here present today, with you on those trips?
A. Yes, sir.

Q. What did you find to be the condition of the crops, the
972 growing crops, orchards and timber on these various trips in 1911, 1912 and 1913?

A. I found them as good as in my section, according to the land. Of course, some lands, have better crops than others and some have not. Then, there is owing to the land and weather, you can not average up every year, but where there were crops they looked about as good as mine, I saw no sign of the Ducktown smoke on them.
Q. What was the condition of the orchards, the apples?
A. They were good.
Q. Were you a member of the party that was camped awhile on Jacks River?
A. Yes, sir.
Q. At that time, I believe, your party was looking over the Vestal and — lands?
A. Yes, sir.
Q. State whether or not you were there on that range of mountains and hills lying south of the Tennessee line, and between there and Ellijay and Blue Ridge?
A. Yes, sir, we was through a good portion of those mountains.
Q. Were you on the sides of those mountains nearest the Ducktown basin?
A. Yes, sir.
Q. Were you on the places that were most favorable and exposed for receiving smoke, if any had drifted down that way?
A. Yes, we were on Tumlin Creek, and that side of the mountain they said would have been most liable to have been hurt by smoke, if there had been smoke in there.

Q. Did you see any dead timber down through that section?

A. Yes, sir, we found more or less dead timber.

973 Q. Were you ever in any forest, Esquire, where there was not a percentage of dead timber?

A. Yes, sir, I have been in a good many forests. I have never been in one yet that I could not find dead timber.

Q. Have you, or not, visited the forests of the country in the Great Northwest?

A. Yes, sir, I have made several trips west, hunted in the Rocky Mountains, and in the mountains of Arkansas and Missouri, and also found some dead timber in all the original forests I have been in, east or west. I have been in a good many east of here.

Q. Have you been through the North Carolina section?

A. Yes, sir, and Virginia, and Kentucky, and South Carolina.

Q. How did the percentage of dead timber you found in that North Georgia section that lies south and southeasterly and southwesterly from Copperhill, how does the percentage of dead timber compare with what you would find in the Northwest, or North Carolina, Kentucky, or Virginia forests?

A. With the exception of the forest-fires in Cobb Mountain, it is as green a section as I have been in I think, in twenty years. Of course, we have got to have some dead timber. When they get out the logs, the loggers will leave the brush piled up against the trees and then when a fire comes along, it will kill a good deal of timber over in there.

Q. Have you ever followed saw-logging or milling, yourself, or had it done, so as to observe the effect on the timber where you had a saw-mill set?

A. Yes, sir, I have had a right smart of lumber cut, and have had some experience with timber.

Q. When you set a saw-mill out in the woods, and cut down trees, what is the usual appearance of the timber around the saw-mill site?

974 A. Well, more or less will die—a good deal killed by fire.

Mr. DRAKE: We except to that as being irrelevant. Exception overruled; appeal taken.

Q. If you cut a pine into wood, what happens to the other pines near it as a general rule?

A. It will start the worms and they kill out the trees around it as far as they can in that season.

Q. Did you, or not, find numerous evidences of saw-mill sites in this southeast and southwesterly direction from Copperhill?

A. I found a great many saw-mill sets.

Q. What did they do with the tree lapps when they cut down the trees for milling?

A. Left them in the woods where they fell.

Q. Then what happened?

A. They were burned up by forest fires.

Q. Then what effect did that have on standing timber?

A. Well, where it fell against standing trees, in many instances it would kill those wherever it would burn.

Mr. DRAKE: We except to that evidence as being irrelevant.

Q. Did you find evidences of where fires had burned out and scalded the trunks of trees near saw-mill sites?

A. Yes sir.

Q. How high did you discover the evidences of flames from forest fires?

A. I saw some trees that were burned fifty and seventy-five feet on the trees, some of them burned to the top.

Q. How frequent are those forest fires through that section?

A. Most every Spring there is more or less fire through the mountains.

975 Cross-examination.

Questions by J. A. DRAKE:

Q. Esquire, how many times have you been a witness for this Company?

A. Sir?

Q. How many times have you been a witness for this Company?

A. I could not state, I have not kept them, I have been a witness for them ever since I have been inspecting for them, it is, I think I said, since 1910 when I done the first work for them.

Q. How many trips have you made for them as an expert to examine fires?

A. Well, I have never made any trips as an expert.

Q. Well, haven't you—if you do not know what causes timber deaths, how do you explain what killed that timber down there?

A. I stated to you what I seen, the most is killed by fire. I can tell where a fire has burned and killed a tree, I think.

Q. You can do that, can you?

A. Yes.

Q. Did you see any trees down there that were killed by anything else besides fire?

A. Yes, sir, I seen some dead trees there where there was not any sign of fire, I think, just as I have seen in other forests I have seen.

Q. Do you mean to be understood that the forests just south of Ducktown, in the State of Tennessee, and Southeast of there for several miles are similar to other forests that you have visited in other portions of the Country, in Arkansas, Missouri and the West?

976 A. Yes, sir, aside from the old saw-mill sets where the timber has been cut and the fire got out and killed it. I did not see any more dead timber there, or per cent of it than in other countries, that is my observation.

Q. Which way is your land that you speak of in North Carolina from the Ducktown Copper Company's plant?

A. It is pretty much east, northeast a little.

Q. A little northeast?

A. Yes, sir.

Q. And the edge of it, you say, I believe, comes as close as four or five miles of it?

A. Three or four miles.
Q. Three or four miles?
A. Yes.
Q. How far east, then, is it to the far edge of your land?
A. It is about six, seven, or I suppose about eight miles from the Isabella plant, and I own another tract of two thousand acres near Ducktown, on the headwaters of Shoal Creek, is the nearest land of mine from that to the Ducktown Copper Company's plant.
Q. At whose instance did you make all these trips of inspection that you speak of?
A. How is that?
Q. For whom did you make these trips of inspection down into Georgia?
A. The D. S. C. & I. Company.
Q. And you have been at that work, I believe, since 1910, each year?
A. Yes, sir. The first work I done was in Tennessee. We were on the Whitmore and Stephens property, I believe, down in the other Mountain. 1911 was the first trip I made over on Frog Mountain.
977 Q. When was the first trip you made into Georgia for this Company?
A. 1911, I believe.
Q. When was the next trip?
A. I think the next trip was in October, I believe.
Q. The next October?
A. Yes.
Q. Is that the trip on which you went to Ellijay?
A. No sir, I did not go to Ellijay, I did not go that far down. I went down towards Sherry Log, and through there.
Q. You were with the same party, that was the same trip that some of them did go to Ellijay?
A. They went down their a few days afterwards. I did not go with them.
Q. What I mean, that is the same trip you were at Cherry Log?
A. Yes, sir, that was the same trip.
Q. At the time you went down there, I will ask you if the frost had not fallen?
A. No, sir, there had not been any frost that I know of at that time.
Q. What time in October was that?
A. I think we started out about the 20th, or somewhere along there.
Q. How long were you on the trip?
A. It was a seven or eight day trip.
Q. I will ask you if you were not over there in November?
A. Yes, I think we went back there once, about in November.
Q. Had frost fallen then?
A. Yes, I think there had been some frost before I went over there on that trip.

978 Q. And on all these trips you made into Georgia, you never did see any signs of smoke?

A. No, I never saw any, or anything I thought was smoke signs.

Q. Do you know smoke signs when you see them?

A. I think I can tell it. Sometimes there are other kinds of smoke.

Q. Did you explain to the citizens of Georgia when you were down there making that tour, that you were viewing out a way for a new railroad?

A. No, sir..

Q. Did any of your party make that claim?

A. I never heard of it.

Q. I will ask you if you did not conceal from the citizens of Georgia where you went your purpose?

A. No, sir.

Q. And didn't your party conceal it from the citizens?

A. No, sir.

Q. What work you were on?

A. I never heard any such a thing, I never heard it. I know I never did it.

Q. Did you go to any of the citizens and tell them what you were doing and ask them to point out smoke damage?

A. No, sir, I never did. They knew what we were in there for.

Q. How do you know that they knew it, if you did not tell them? If you did not go to them and ask them?

A. We stopped for dinner on Stanley Creek, and it was at one of the Stanley's and they are the only ones that I remember telling, and I asked Mrs. Stanley if she ever had any vegetables hurt in her garden. She said everything was nice, she had everything nice to eat, and she said she never did.

Q. That was where?

A. Over on the waters of Stanley Creek, after we crossed
979 Blue Ridge, and turned towards the Tococoa River.

Q. After you crossed the Blue Ridge?

A. We had been on Jacks River.

Q. That was how far from these plans?

A. Why, southeast, I suppose, or south.

Q. It is a very mountainous country back through there?

A. Yes, sir, that is mountainous, and——

Q. And the valley is narrow across from east to west isn't it? Or northeast to south-west, much more than it is from northwest to southeast in that basin, it is much narrower across that way than down the other way, isn't it?

A. No, I think not.

Q. It is longer than from East to West, the basin is?

A. You mean the Ducktown basin?

Q. Yes?

A. Well, I do not know, I never measured across it either way. I do not think there is very much difference, it is in a circle, is my observation.

Q. You have lived there all your life, and have seen all of that, all your life, and the best you can observe is, that it is about round?

A. Yes, sir, it is very much rounded. Of course, the mountains cut in in some places.

Q. And there is not any break or opening in the mountains down into the State of Georgia, southeast from these plants, leading in from Blue Ridge and through the gap?

A. There is through Blue Ridge gap; that is the last opening around there.

Q. Is there not a general depression down that way, and does not the mountain tower up on each side?

A. No, sir, I think not.

Q. Isn't it a fact that these northwest winds, blowing that way, forces all the fumes from these smoke stacks and drives it
980 down into the State of Georgia that way?

A. These northwest winds would drive the smoke from the Tennessee Copper Company plants further towards Frog Mountain.

Q. That is not the question I asked you, Mr. Payne. If the wind were blowing towards the southwest, wouldn't it drive the smoke fumes down through the valley to Blue Ridge?

A. From the southwest?

Q. Blowing from the Tococoa river, down towards the southeast, sorter up?

A. No, sir, that would not drive it in that direction at all, it would drive it southeast.

Q. Is not that what I asked, if the wind from the northwest, blowing towards the southeast, would not that blow it in a general direction up the River?

A. Yes, sir, right up the Ocoee River.

Q. And if these winds are the prevailing winds, then it would drive the air currents over towards this woman's house to where you said you stopped, as she lived in a southwest direction from there.

A. She lived a little bit southwest from Blue Ridge, I suppose, I do not know exactly what direction it would be. It would be very much southwest from Blue Ridge to Stanley Creek.

Q. Didn't you just state awhile ago, that that Frog Mountain, where you camped, and it is a fact, is it not, over there, making this inspection where this woman you were speaking about lived, was southwest from the Copper Company's plant?

A. Yes, sir, I said southwest, but not up the Tococoa River, it would be across the hills.

Q. In another direction?

A. Across the Blue Ridge.

Q. It would be in an opposite direction from there?

A. It would be in the line of that a little.

981 Q. And if the wind blows up the Tococoa River and in a southeast direction, they would not then be blowing towards Frog Mountain, and where they camped, would they?

A. No, sir.

Q. You say you have never seen any timber over there that you thought was killed by smoke?

A. No, sir.

Q. Have you ever seen any timber that the leaves were scorched by smoke?

A. No, sir, I never found any scorched leaves after we got a few miles across the river from the plant.

Q. Can you tell what killed the timber where you have been?

A. No, sir, as I told you, I can tell where it has been killed by forest fires, or burned and killed.

Q. Can you tell what killed any tree after it has been dead three, or four or five weeks?

A. No, sir, if there is no sign of anything that I can see I could not tell. And nobody else can tell.

Q. Then, you do not know what killed the timber in the North Georgia territory?

A. I told you what I saw most was killed by forest fires.

Q. You said awhile ago there was some killed over there, but you did not know what killed that.

A. No, sir, I do not know what caused it to die, only the natural causes. I told you I had never been in any original forests that I had not seen dead timber.

Q. Yet you do not know what caused the timber to die except forest fires. How do you know what the natural causes are?

A. As I told you, I am not an expert, I do not propose to undertake to tell something that I cannot, but I know they did
982 die of natural causes.

Q. You do not think that the scorching of the leaves by smoke would hurt them anyway?

A. No, sir, they will come out in the Spring. It will take a number of years of scorching of the leaves to kill the trees, is my observation.

Q. Do you not know as a matter of fact that the scorching and burning of the leaves by these fumes would help the tree?

A. Help it?

Q. Yes, be beneficial to it?

A. No, sir, I do not think so.

Q. I will ask you if the fumes on striking a tree, hit the leaves and turn them brown, and then they fall off in August, two months before the natural time for frost to come and kill them, do you think that would hurt the tree?

A. Not unless it strikes it the next year, and the year after that, and for two or three years. I do not think it would.

Q. You do not think so?

Mr. MILLER: Let him answer.

A. (continuing:) I said it takes, steady application of that smoke every year, for three or four years to kill it. Scorching it once a year won't do it, unless it is repeated.

Q. Now, don't you know that if three or four years of that smoke would kill a tree, one year would injure it seriously? Answer so the stenographer can hear you.

A. How is that?

Q. What do you answer to that question?

A. I never heard you. No, sir, I do not think it would injure it seriously. I know from experience. I have a section of the country close to me that one year after they put up that high stack
983 the smoke come through and scorched the leaves, and they fell off the first of July, and last of August, and they said it was dead, I said, "No," it was not, and the next year it all grew out, and is as green today as any part of the country, that is from my own experience.

Q. Then, it is your conclusion, that one or two years when it strikes it, it will not kill the tree?

A. I said it takes three or four year- of mighty strong applications of it.

Q. How many years do you think it would take to injure Irish potatoes?

A. I suppose one application would be enough.

Q. And a growing corn crop?

A. I suppose if it is strong enough it would kill it in one year. I have never seen any. I never saw any signs of mine with smoke on.

Q. Did you, in all of your trips to North Georgia, ever see a single crop of Irish potatoes, or *oaths*, or corn, or rye, or wheat, or apples, damaged by smoke?

A. I never saw any I considered smoke had hurt.

Q. I will ask you if you ever saw the corn crop of J. Y. Allen, in the year 1912?

A. Yes, sir, in that year I went and examined a crop of corn they said belonged to J. Y. Allen.

Q. Well, what was the condition of that corn?

A. It was about as fine corn as I ever seen in that country.

Q. How much would it make per acre?

A. I think it would have made about sixty to seventy five bushels per acre.

Q. And that corn was not damaged by smoke, was it?

A. I think not.

Q. What month did you see it in?

A. That was the last of October, to the best of my re-
984 membrance.

Q. I will ask you if that was not the best corn crop you saw on that whole trip?

A. Well, taking the whole field, I think it was as good as the rest. There was a crop, a small acreage, that was good. I think over close to Blue Ridge there.

Q. Who had any better corn than that in that neighborhood?

A. I do not remember now, I did not take notice of any particular crops, take the names of the people, but I saw the different fields of corn that was good. I do not think I saw any fields that would average with that one of Mr. Allen.

Q. I will ask you if you did not swear in the Shippen Bros.' Company case that that was the best corn crop you saw that year?

A. I don't remember. I say yet I think it was the best average field of corn I saw.

Redirect examination.

Questions by W. B. MILLER:

Q. Was that the same J. Y. Allen that wanted to pick a fuss with Mr. Reese when he went to get samples of corn for the case in the United States District Court?

Mr. DRAKE: We except to that for the reason that it is hearsay, and the witness has not stated that he raised any row with Mr. Reese.

Exception overruled; appeal taken.

A. I think so.

Q. Do you know where what is known as the John Quinn orchard is, that lies out east of the Isabella furnace?

A. No, sir, I don't remember that I ever saw that.

Further deponent saith not.

Sworn to before me this 19th day of June A. D. 1914.

_____,
Clerk and Master.

985 The distance traveled by this witness from his home to the place of giving deposition is total of 244 miles, 122 miles each way.

986 STATE OF TENNESSEE,
County of Hamilton:

I, CHAS. M. FAIN, Notary Public in and for said state and county, and stenographer, certify that the foregoing transcript is a true and correct, and honest transcript to the best of my skill and ability of my notes taken in shorthand.

This June 28th, 1914.

CHAS. M. FAIN. [SEAL.]

987 No. 1.

THE STATE OF GEORGIA, Pl'tf,
vs.
THE TENNESSEE COPPER COMPANY and THE DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, L'T'D, D'f'ts.

Original. In Equity.

The Depositions of W. F. Naughan and Others, Taken on Behalf of the Defendants, the Ducktown Sulphur, Copper and Iron Company, L't'd, Commencing Thursday, June 18th, 1914, in the City of Chattanooga, Tennessee, Pursuant to a Notice Hereto Attached, in the Presence of J. A. Drake and Lamar Hill, Representing the State of Georgia, and J. A. Fowler, George G. Hyatt and W. B. Miller, Esqs., Representing the defendants.

988 L. A. HUGHES, the next witness called, be- first duly sworn, upon direct examination deposed as follows:

Direct examination.

Questions by W. B. MILLER:

Q. What aged man are you, sir?
A. Sixty-four, going on sixty-five.
Q. What county in Tennessee do you live?
A. Claiborne.
Q. What relation, if any, are you to Judge Hughes, who is a member of the Court of Civil Appeals of Tennessee.
A. A brother.

Mr. DRAKE: We except to that as being irrelevant and incompetent.

Q. How long have you been engaged in the lumber business?
A. I have been engaged in the lumber business over thirty years.
Q. State whether or not you have made a specialty of investigating and buying timber for timber companies and lumber companies during the last twenty years?
A. I have.
Q. Well, how long do you say?
A. I said for thirty years, and a little over.
Q. That has been your business?
989 A. Yes, sir.
Q. Have you purchased timber for many or few timber and lumber companies?
A. I have purchased a good deal of timber for different parties. Snodgrass, up here at Philadelphia, the veneer people, and some others.
Q. Timber on the stump?

A. On the stump and in the log, both.

Q. What sized *stacts* have you inspected and made purchases of for the various lumber companies?

Mr. DRAKE: We except to that question as being irrelevant. Exception overruled, appeal taken.

A. Well, I went over some pretty big boundaries, I think they said there is something like sixty thousand acres there in one boundary.

Q. Where was that?

A. That is up on the head of Little River.

Q. In what State?

A. Tennessee.

Q. What County?

A. I reckon it was in Sevier County, it might not have all been in Sevier.

Q. How large are some of the other tracts, just a few that you have purchased and inspected?

A. Ten and eleven thousand acres in one. I never purchased one that big, but I have looked over them.

Q. You have made reports on them?

A. Oh, yes.

Q. State whether or not you have ever been engaged in farming, or had it carried on?

990 A. Sir?

Q. Are you a farmer?

A. I have not farmed much myself.

Q. Have you had farming carried on?

A. Yes, sir.

Q. What size farm do you own?

A. Between three and four hundred acres.

Q. I will get you to state whether or not, at the instance of the Tennessee Copper Company, you went into the section of Georgia, that is, in Fannin County, that lies south, southeast and southwest from Copper Hill?

A. Yes, sir, along in there.

Q. During what years were you down in that section?

A. It was in 1912.

Q. Looking at the timber, crops and orchards?

A. Yes, sir.

Q. What did you find as to the condition of the orchards and fruits and gardens and the fields and forests down through there?

A. It all looked fine, the fruit crops, gardens and everything.

Q. That was after you left Copperhill, for about a mile or so?

A. Yes, sir.

Q. Did you go down from Copperhill through the mountains and ride through the hills and timber down as far as Jacks River?

A. Yes, sir.

Q. Were you on Fighting Town Creek?

991 A. Yes, sir.

Q. Were you on Tumlin Creek?

A. Yes, sir.

Q. Were you through the Cowpen Mountains and the other tier of Mountains that extend through that section?

A. Yes, sir.

Q. Were you on the sides and faces of those mountains that were toward Copperhill, so that if the smoke had been drifting down that way the timber would have shown it?

A. Yes, sir.

Mr. DRAKE: We except to the form of that question, because it calls for a conclusion.

Exception overruled, appeal prayed.

Q. What did you find as to the death rate of timber down through there, did you find much dead timber?

A. Yes, sir, I found some.

Q. How did it compare with dead timber that you found in other sections of forests in country entirely away from there?

A. I saw some places away from there that were worse than that was, and some places I saw that were worse than that.

Q. Did you, or not, find any evidences of forest fires where you found most of the dead timber in this North Georgia Section?

A. Yes, sir, most of it was pine and chestnut.

Q. What has been your observation as to the death rate of chestnut and chestnut oak through Eastern Tennessee and western North Carolina during the last few years.

992 Q. It is pretty bad.

Q. Do you know whether or not it is called chestnut sly, has killed it out very extensively?

A. Something life that has killed it, worms and bores, a great deal of timber has been killed by bores.

Q. Did you see evidence of forest fires, and sawmill sites through that North Georgia section?

A. Yes, sir.

Q. Do the forest fires damage the growing timber any?

A. Yes, sir, all fires do damage it.

Q. How high up the trunks of trees did you see the fire scalds on the standing, growing timber?

A. On the growing timber, where it was green when the fire was there, it had not gone but about ten or twelve feet, but on dead timber, it had gone all the way up, and where it had been green when the fire was there, it had not gone so high.

Q. What is your experience as to the effect of forest fires on growing timber, particularly young timber?

A. It will kill it out, it does not take a big fire to kill timber, just fire enough to sour the sap in the timber, will kill it, quicker than if you were to build a big brush heap around it.

Q. Mr. Hughes, did you have any interest in the outcome of your investigation down there, interested in any manner in the Ducktown Copper Company?

A. No, sir.

993 Q. I will get you to state whether you had any object except to honestly ascertain and truthfully report the facts?
A. That was all I had.

Cross-examination.

Questions by J. A. DRAKE:

Q. How many trips of inspection have you made for the Ducktown Copper Company?
A. Well, I would have to count awhile. I have made some six or seven.
Q. When did you make the first one?
A. The first one was in 1912.
Q. Where did you go on that trip?
A. I went to Jacks River, and in that country.
Q. What direction is that from Ducktown, the Ducktown Copper Company?
A. Why, I do not know the distance, I am not very well acquainted with the country, but it must have been some fifteen or twenty miles.
Q. What direction is that from Ducktown, the Ducktown Copper Company?
A. Kinder south, in that direction.
Q. How long did you stay on that trip?
A. Well, ten or twelve days.
Q. What time of the year was it?
A. It was the Fall of the year.
Q. What month?
A. October, I might have been there about the same time in September and stayed until October.
994 Q. How is that?
A. I went there in September, about the 26th of September, and stayed until October.
Q. Then, when was the next trip you made?
A. It was in October.
Q. Of that same year?
A. Yes, sir.
Q. What time in October?
A. About the Seventh.
Q. How long did you stay on that trip?
A. I could not tell that, sir, without counting how many days, some eight or ten days then.
Q. Where did you go on that trip?
A. I went across the other way, kinder of around in what is called Fightingtown Creek, you are speaking about, and back down to Blue Ridge and through that part of the country.
Q. Did you go to Ellijay on that trip?
A. No, sir, not on that trip.
Q. When did you make your next trip?
A. The first of November.
Q. Of that same year?

A. Yes, sir.
Q. Where did you go on that trip?
A. I went down to Ellijay and through that part of the country then.
Q. And at that time, I will ask you if there had been any frost?
995 A. Yes, there had been a frost while we were on Jacks River the first trip.
Q. The first trip?
A. Yes, sir.
Q. Did you see much signs of it through the woods and on the tree tops?
A. It was not heavy enough to make much of a show, to show much sign.
Q. Did it kill some of the leaves, or not; did it not parch them up?
A. Some, not much; it was not a very heavy frost.
Q. When did you make your next trip?
A. Well, it was, I made the next trip, it was about the same time, I might have made one between that time, I only went home a day or so, and then went back.
Q. You made about four trips in 1912, did you?
A. Yes, sir.
Q. When did you make your next trip?
A. I made one the last of last January.
Q. You mean January, 1914?
A. Yes, sir.
Q. To inspect growing vegetation?
A. To inspect timber; there was not much growing vegetation.
Q. When did you make your last trip?
A. That was the last trip I made.
Q. Didn't you make any trips in 1913?
A. I can tell by looking at my book.
Q. Well, get your book, if you have it, and see whether
996 or not you did. I want to know about it.

(Witness examines memorandum book).

A. I don't think I did.
Q. You mean by that that you do not think you made any trips last year?
A. No, not in 1913.
Q. Can you tell the difference between smoke damage and frost on vegetation?
A. Yes, anybody ought to tell that.
Q. What is the appearance of effect, then, of this sulphur smoke on leaves and growing vegetation, describe it, please?
A. I do not know so much about the smoke, the frost will cook them up, as soon as the sun shines on them, they will die.
Q. Have you—If you do not know the effect of smoke, how do you know the effect of frost?
A. It takes them longer to kill.

Q. You just said you did not know what the effect of smoke was.

A. I am not so, well acquainted with it as I am with frost.

Q. That time you were at Ellijay, there had been a couple of frosts that year?

A. Yes, sir, some frost.

Q. You never did, then, make any inspection down there in the growing months of July and August, when the stuff is growing, and everything is full of leaf?

A. No, sir, not any.

Q. At the time you were down there in Georgia, around Ellijay, all through there, the leaves then were brown and crisped up by the frost, as you just have described the way it does it?

997 A. It gets red, and then turns brown, and finally falls off the trees, and some fall off, you can tell when the leaves get ripe and red and fall.

Q. If there had been smoke injury at that time, you could not have told it anyway?

A. Yes, I think we could.

Q. How could you have told it if the frost had already crisped the leaves and they were falling in the condition you have described?

A. Frost does not crisp the leaves. It is that way when the smoke hits it, when the frost kills it, they are about ready to fall, and the frost does not hurt them.

Q. The leaves had fallen to the ground at that time, a great many of them had?

A. Yes, sir.

Q. How did you know what put them on the ground?

A. At that time of the year, when they were ripe and dropped of- ——

Q. Then, you were never there at the time of the year when they were growing, to see if there was any damage?

A. I could not tell in September, when I went there, but some garden stuff, and such as that, I did not see any smoke on it.

Q. You were out on Frog Mountain, in that forest of the Vestals, where there was not anybody living, wasn't you?

A. I was out in there, but some people are living there.

Q. A mighty few?

A. Several people are living there, I passed their houses.

998 Q. That part of the trip was southwest from these plants, wasn't it?

A. Sir?

Q. That part of the trip was southwest from these plants wasn't it?

A. Sorter that way, I am not so well acquainted with the country, to tell exactly the course.

Redirect examination.

Questions by W. B. MILLER:

Q. Mr. Hughes, if there had been any timber killed over there, you could have seen that?
A. Yes, sir.
Q. If the crops had been killed, or the fruit had been injured, you could have told that?
A. Yes, sir.

Further deponent saith not.

Sworn to before me, this 19th day of June, 1914.

——— ———.

The distance traveled by this witness from his home to the place of giving his deposition, and return, was a total of three hundred twenty-two miles, or 156 miles in each direction.

999 J. A. MILLER, the next witness called, being first duly sworn, upon direct examination deposed as follows:

Direct examination.

Questions by W. B. MILLER:

Q. Mr. Miller, where do you live?
A. I live at Athens, Tennessee.
Q. How long have you lived in McMinn County, Tennessee?
A. I have lived there about forty-five years.
Q. What business have you been in, in recent years?
A. Well, I have been farming some for several years, and I have been in the saw-mill business a little, and then I have been dealing in real estate for the last eight or nine years.
Q. Have you ever owned, sold or bought timber?
A. Yes, sir.
Q. Well, have you any interest in the Ducktown Copper Company?
A. No, sir.
Q. Were you requested sometime back by the Ducktown Company to go down into the North Georgia section or country and look at the timber and crops down through there, with a view of finding whether the people were being damaged any?
A. Yes, sir.

1000 Q. Did you have any object or instructions on going down there, other than to honestly ascertain and faithfully report the facts?
A. That was all.
Q. About when did you first go into that section, that lies south, southeasterly and southwesterly of Copperhill?
A. We went down there the 9th day of September, 1913.
Q. How much time did you spend through that section?

A. About nineteen or twenty days.
Q. Going continually through that territory, back and forth?
A. Yes, sir.
Q. Were horses provided for you?
A. Yes, sir.
Q. Did you ride all the time?
A. All the time.
Q. Did you go through the forests?
A. Yes, sir.
Q. Did you go by fields?
A. Yes, sir.
Q. Did you go by orchards?
A. Yes, sir.
Q. Did you inspect the gardens?
A. Yes, sir.
Q. Did you talk to people through that section?
A. Yes, sir.

Mr. DRAKE: I object to this evidence as being leading.
Exception overruled, appeal taken.

Q. Did you stay all night with any of them?
A. No, sir, I did not stay all night. Yes, I did down with one or two of them, at the last, that was further down in Gilmer
1001 County.
Q. Gilmer County?
A. Yes, sir.
Q. Did you completely cross Fannin County?
A. Yes, we crossed Fannin.
Q. And during the time you were out on this long trip, did you pass in and out along the water courses, mountains and hills that lay within ten and twelve miles of Ducktown?
A. Yes, sir.
Q. What was your object in going through these mountains, crossing the streams, and through the gardens and fields?
A. Our object was to see whether or not that smoke had done any damage in that country, and see how the timber looked.
Q. Do you know how the gardens, fields and orchards appeared up in that section—your section—hundreds of miles away from there?
A. Yes, sir.
Q. What did you find the conditions to be down in the North Georgia Section, as compared to McMinn County, around Athens and further away from that than Ducktown?
A. I am not out seldom, but it was much better over there, the vegetable crops, it was finer than it was around where I live, a good deal. It seemed like everything was green and nice, and they had better seasons over there, and everything was looking prosperous.
Q. Well, while you were passing along in that section, did you take occasion to go, or were you shown over what is known as the Vestal property?

1002 A. Yes, sir.

Q. Do you remember being on Fightingtown Creek and Jacks River?

A. Yes, sir.

Q. What mountains were you in, and across, while looking over the Vestal Lands?

A. Well, we were in the North Georgia Mountains, in Fannin County, and partly in Gilmer County.

Q. Were you on the sides and tops of those mountains, the most exposed to the fumes that would drift over from Copperhill?

A. Yes, sir, I think so.

Q. What other sections of the country have you visited in recent years, to familiarize yourself as to the death rate of timber, aside from McMinn County, where you live?

A. Well, I have been in twelve or fifteen or more counties.

Q. Of East Tennessee?

A. Yes, mostly. I have been in Tennessee and over in the edge of Middle Tennessee, Cumberland County, I was up in North Carolina, too.

Q. You have been through the mountainous section of Tennessee and North Carolina?

A. Yes, sir, right in the mountains.

Q. How recently was that, Mr. Miller, how many months ago?

A. That was in March, 1914, to the best of my recollection.

Q. How many days were you on these trips going through the woods?

1003 A. I think about seven or eight days.

Q. Now, I will get you to state what you observed as to the death rate of timber, down through the north Georgia section, after you got a mile or two away from Copperhill, as compared with this Eastern Tennessee and Western North Carolina timbered section?

A. It seems to me that it was that way, timber was very sorry, and more of it dead.

Q. Have you ever been in the forests when you did not find more or less dead timber?

A. Sir?

Q. Have you ever been in forests of any size where you did not find more or less timber that was dead?

A. No, sir, you find dead timber generally.

Q. What did you observe as to evidences of forest fires in the North Georgia section, if any?

A. State the question again?

Q. What observation did you make as to forest fires in the North Georgia Section?

A. There had been some large fires, big forest fires that had done a heap of damage.

Q. What effect had those forest fires on timber, growing timber?

A. At certain times of the year it will pretty near kill it all, when the sap is up, up in the timber, and the fire gets into it in the Spring

of the year, it does a great deal more damage. It does not do so much in the Fall, when the sap goes down.

1004 Q. Now, the creeks that run through that mountainous, that is, back of the Copperhill section of Polk County, did you observe whether or not there had been numerous saw-mill sites along them?

A. Yes, sir.

Q. And what is the result of operating saw-mills in a body of timber?

A. Well, when you go into it and cut out a great deal of timber that way, you get the worms, generally they take the timber, and it makes it a heap worse if you go into a body of pine timber and go to cutting it, it nearly kills it all at time.

Mr. DRAKE: We except to the evidence relative to his trips to Fentress and Cumberland Counties, Tennessee, and adjacent counties, as being irrelevant and immaterial.

Q. Now, allowing for the timber that has been killed as the result of fires and the result of mill operations along those water courses where the saw-mills have been operating, I will get you to state whether there was an unusual death rate in that North Georgia section?

A. Not much.

Q. Was there an unusual death rate of timber in that North Georgia Section?

A. Not outside of those saw-mill sites and around those old places where it was cleared, no sir. Hemlock timber, there was a good deal dead in places around that country, around the saw-mill *sets*, and around the little cleared places. Outside of that I did not see anything uncommon about it at all.

1005 Q. Around those places, the ones you spoke of, could you tell whether the trees had been denuded by feeling that gas?

A. Yes, sir a good many.

Cross-examination.

Questions by J. A. DRAKE, Esq.:

Q. When were you first employed by the Ducktown Copper Company?

A. Sometime before I went up there, a few weeks, possibly, before I went up there in September, 1913.

Q. Who was with you on your trips down into Georgia last year?

A. Well, there was, I expect I would have to,—Mr. Reese, here, Mr. Maughan, Esq. Maughan, and Mr. Higdon, I can give you the names of them, I would have to look for the rest of them.

Q. Was Mr. Hughes with you?

A. No, sir, Mr. Hughes was not with me, I do not believe.

Q. Wasn't Mr. Payne with you?

A. Yes, sir, Mr. Payne was with me.

Q. Did you camp on that trip?
A. Which?
A. Did you camp out any?
A. Yes, sir, we camped.
Q. Where did you go to first, when you went into Georgia?
A. When we went over there, we went on Jacks River, in Fannin County.
1006 Q. That is away over southwest from these copper plants, isn't it?
A. Yes, sir.
Q. About how far from them?
A. It is about twelve or fourteen miles, I think.
Q. You were over there *expecting* the Vestal timber, were you not?
A. Yes, sir.
Q. That smoke has been a benefit to that country, hasn't it, if the timber is not so bad in and around these places as it is in other places where the smoke has not gone?
A. I do not think it has been any disadvantage. I could not tell it had hurt anything.
Q. You can not say it has been an advantage?
A. No, sir, I could not say it has been any advantage, but I do not think it has been a disadvantage.
Q. You have been living about how many miles, all these years, from there?
A. About sixty miles.
Q. And they went over sixty miles, over there at Cleveland, to get you to go and inspect it for them? On account of your expert knowledge as a smoke inspector?
A. I don't know what they did it for, they done it.
Q. Are you an expert on smoke, and the effect it has on forests?
A. I do not think I am. I know smoke when I see it.
Q. Sulphur smoke?
A. I think I know that, but I do not claim to be an expert on anything.
1007 Q. Are you an expert on growing vegetation, Mr. Miller?
A. No, sir, I do not believe I am; I do not claim to be.
Q. The only time you have ever been over there was in September of last year?
A. That was the first time.
Q. When was the last time?
A. I was over there some two or three months ago.
Q. This last early Spring, or wintertime before the leaves came out, or afterwards?
A. Along since the leaves came out.
Q. How is that?
A. I said since the leaves came out.
Q. When was it, I want the dates, if you can give them to me.
A. I do not know that I could give them directly.
Q. You cannot tell the months you were over there this year?

A. I have got it on the books, but I have not got the books of this last trip with me, I did—I do not think.

Q. You remembered without your books that you went there last September and saw the conditions, and why is it you can not remember this year?

A. Well, I think it was in April; that is my recollection. I won't be positive about it.

Q. What part of April?

A. I think it was along about the 10th.

Q. Along about the 10th of April?

A. I think so.

Q. Who was with you on this trip?

1008 A. Well, I just went on this same land this trip. I was up there at Court, and went out into the edge of Georgia there, one day, to see the land. That is all I was there, that is, this last trip.

Q. You were up there at Court as a witness for this Company?

A. Yes, sir.

Q. And went out in the edge of the country. Were you in a horse and buggy?

A. No, sir, I went out in a hack.

Q. Where did you go to that day?

A. We went over there in the edge of Georgia.

Q. Don't you know whereabouts?

A. Well, I could look and see whereabouts, but I can not recollect all these things.

Q. Well, I wish you would look and tell me where you went to, and who you talked to and saw over there?

A. I could not do that; we saw several men. I could not tell you who I talked with, and who I saw. (Examining memorandum book). I think I was on some of the Harper land over there.

Q. Where was that in Georgia? Don't you know any post office, or store, or anything like that, you can locate it by?

A. No, sir, I do not think there is any store over there, I did not see any.

Q. You can just remember now, one man's land, by the name of Harper that you were on?

A. Yes, sir.

1009 Q. And that is as near as you can locate yourself in North Georgia?

A. Yes, sir, on that trip.

Q. On that other trip, you said you stayed several nights with different people?

A. No, I said I stayed two or three nights. I stayed with Mr. Clayton up above Ellijay.

Q. What Clayton was that?

A. I do not recollect his given name.

Q. What does he do?

A. He is a surveyor, county surveyor.

Q. Who did you stay with another night?

A. We stayed with him two nights, and I do not believe we stayed with anybody else on that trip. We stayes at camp.

Q. You stayed in camp every night except the two nights you stayed with Mr. Clayton?

A. Yes, sir.

Q. Now, did you talk to many people up there about their damage?

A. Yes, sir, I heard several men speak about it, one way or another.

Q. Was that the trip last Fall?

A. That was the trip in September.

Q. They told you that they had been damaged a good deal there last year, didn't they?

A. No, sir, the men over there didn't talk, the citizens did not talk like they had been damaged. There was none of them that claimed damages.

Q. You never saw a man that claimed damages?

1010 A. No, sir, I do not think that they did.

Q. Tell me one man you saw that told you that?

A. There were several men over there that told me it did not hurt them. I do not know whether I could give you the men's names.

Q. Out of so many you talked with, please tell me one man that I may know who he is?

A. Well, there was two or three of the Harkins.

Q. Harkins?

A. Yes.

Q. Was Tom Harkins one?

A. I reckon it was Tom, I do not know whether it was Tom or Dick.

Q. What was the other one's name?

A. I do not know. There was one.

Q. And can you name the others besides Tom?

A. I can name several, if I can think of their names; I did not suppose their names would have anything to do with it, and I did not post myself.

Q. There was two of the Harkins?

A. The best I recollect.

Q. Both told you that?

A. I think so. I do not recollect anybody that claimed that it hurt them, just to go to the short of it.

Q. Where were they when they told you this?

A. They might have been at the camp, they were there several times, or might have been some where else.

Q. What camp do you speak of?

A. The camp over there on Jacks River, at our tents.

Q. On Jacks River?

1011 A. Yes, sir.

Q. What effect does smoke, that sulphur smoke, have on leaves of growing vegetation?

A. I do not know; I never seen where it took any effect.

Q. You did not do what?

A. I never seen where it took any effect.

Q. You have never seen any smoke effect in there?

A. No, I never saw where any took effect, if it did, I could not tell it.

Q. You never saw any sulphur smoke damage to timber at any point, or at any place?

A. No, I might have seen some of it after it was done, but I never seen any on the timber, if I did, I did not know it.

Q. Did you see any afterwards, or at any other time? That you thought the smoke had done.

A. No, sir, I don't know what done it. I saw some dead timber, but I do not know what done it.

Q. On the trip you spoke of, over to Cumberland, and those various counties in Middle Tennessee,——

A. They are in Middle Tennessee, around Monterey.

Q. Who was with you on that trip to Cumberland, Fentress and those adjacent Counties over in Middle Tennessee?

A. Mr. Reese, Prof. Bain, Mr. Shiflett.

Q. When was that trip made?

A. (Examining memorandum book.) That trip was made on March 15th, 1914. We were out there at Monterey.

Q. There were not any leaves out that time of the year, were there?

1012 A. No, sir.

Q. Why did you go from the extreme southeast corner of Tennessee over to Middle Tennessee, to this particular point to look at timber damages?

A. Well, I was sent over there by the Company, to see whether I thought it was real smoke damaged timber, or what it was, or whether I was right about it. I did not think the smoke had done it, and I went over there to see whether I thought it had, or not, whether the timber was different anywhere else. That was my business over there, to look at the timber over there, and see the condition of the timber over there.

Q. Are not there thousand and millions of timber between Ducktown, Tennessee, and Monterey, Tennessee, where you got off at?

A. Yes, sir.

Q. Big forests of timber all across that Cumberland Company before you come to Monterey?

A. How is that?

Q. All across the mountain?

A. Oh, yes, there is timber, certainly.

Q. And is not Monterey on the extreme far edge of the Cumberland Mountain Plateau from East Tennessee?

A. No, sir, not on the far edge, right on top of the mountain.

Q. Isn't it right at the top of the incline?

A. I do not know, sir, I did not go beyond it, I went to Monterey, and to the country to the left of Monterey.

Q. You know you can stand on the mountain at Monterey, and look all over Middle Tennessee, don't you?

1013 A. You can see a good deal.
Q. Don't you know all the Cumberland Mountain lies back east of that?
A. You have a pretty good view, yes.
Q. And the only reason you can assign for going to that particular point was that the Company sent you?
A. Yes, sir, they solicited me to go over there.

Redirect examination.

Questions by W. B. MILLER, Esq.:

Q. They sent you out hundreds of miles -way to see the condition of timber, and you went and looked at it and come back?
A. Yes.

Further deponent saith not.

Sworn to before me, this 19th day of June, A. D., 1914.

____ ____,
Clerk & Master.

The distance traveled by this witness from his home to the place of giving deposition was — miles, — miles in each direction.

1014 W. L. DALTON, the next witness called, being first duly sworn, upon examination, deposed as follows:

Direct examination.

By J. A. FOWLER, Esq.

Q. 1. Where do you live, Mr. Dalton?
A. I live in Copperhill.
Q. 2. In Copperhill, the place where the Tennessee Copper Company's plant is located?
A. Yes, sir.
Q. 3. How far do you live from the plant?
A. A little over a quarter.
Q. 4. How long have you lived there?
A. Well, I have been living there last February a year ago.
Q. 5. Do you hold any official position?
A. I am J. P. in the Tenth District.
Q. 6. Of Polk County?
A. Yes, sir.
Q. 7. How long have you been justice of the peace?
A. Last August, a year ago.
Q. 8. 'Squire, how long have you been familiar with that neighborhood, that country in there?
A. I have been living in the Tenth District, outside of two years, for thirty-seven years.
Q. 9. Were you raised in that district?
A. Yes, I come there when I was about ten years old.

Q. 10. Were you acquainted with that locality when they roasted the ore in open heaps?

1015 A. Yes, sir.

Q. 11. What effect did that have on the timber?

A. Pretty bad.

Q. 12. In that Basin?

A. In four or five miles out it killed all, everything.

Mr. DRAKE: We except to that evidence as irrelevant. Exception overruled, and appeal taken.

Q. 13. What effect did that have on the crops, also other vegetation?

A. It hurt it, there was not very much garden stuff raised for a few miles.

Q. 14. Since the Tennessee Copper Company erected that high stack, that 350 foot high stack, what effect did that have?

A. It don't hurt so bad right around there, but lots of complaint further off. It is doing a lot of damage further off.

Q. 15. It is scattering the fumes?

A. Yes, sir.

Q. 16. Did you travel through that section of the country very much while the stack was operated before the acid plants went into operation?

A. Yes, sir, some,—all over the whole country about there.

Q. 17. Were you down into Georgia some?

A. Well, I have been pretty well all over Fannin County, several times. I have not been in any lower down. I was not down in Gilmer or Pickens Counties, and I never have been in Union

1016 County, Georgia.

Q. 18. Before these acid plants went — operation, and after the acid plants were constructed, do you notice much damage in Georgia?

A. How is that?

Q. 19. I say, before the acid plants went into operation, some few years ago, and after this high stack had been erected, did you notice much damage in Georgia?

A. Yes, sir, a lot of damage down there.

Q. 20. How far did that damage extend?

A. Well, it reached a good long ways, I do not know so far down in Georgia, like I told you, I was just around in Fannin County. I do not know what it has done in Gilmer or Pickens Counties, but there was some smoke signs in Fannin County. They said it was smoke signs, and I guess it was, it looked like it to me.

Q. 21. You saw damage to timber in there?

A. Yes, burnt up and dying.

Q. 22. After these acid plants went into operation, what effect did that smoke have in that country through there?

A. Outside of a few miles, I have seen the stuff scorched *scorched* a little, it has not done anything.

Q. 23. You raise a garden?

A. Yes, sir. Well, I own a farm four miles from Copperhill on Grassy Creek.

Q. 24. In what direction?

A. West of Copperhill.

Q. 25. Is that in Georgia or Tennessee?

A. It is in the Tenth District, Polk County.

Q. 26. How near the Georgia line?

1017 A. I expect it is a mile or a mile and a quarter.

Q. 27. North of the Georgia line?

A. Yes, sir.

Q. 28. What effect did the sulphur have on that farm and the vegetation and timber growing on it before these acid plants were constructed?

A. It has hurt it bad.

Q. 29. Did it kill any timber on it?

A. It killed all the big timber there, large number.

Q. 30. The large, or the smaller timber?

A. Why, I think it killed some of it, seemed to hurt the older timber worse than the younger.

Q. 31. Did it hurt your crops also?

A. Yes, sir.

Q. 32. Since these acid plants have gone into operation in the last few years, what effect have they had?

A. I worked for the Tennessee Copper Company in the last four years, and rented my place, outside of sowing oats and sowing grass, outside of the stuff we raised, Our gardens were good. We raised good Irish potatoes, that is, since the acid plant started, and the apple trees were almost,—the orchard on the place where I live, I have an old fashioned orchard, and at the time they put up the acid plants it was almost dead, mighty near gone, and it has revived up, and bearing apples, and new growth coming out on the old trees, and year before last I sowed three acres in oats, and raised as good as I saw anywhere. I don't care where they come from.

Q. 33. Was that 1912?

A. Yes, sir.

1018 Q. 34. Do you know whether or not oats are especially susceptible to these fumes?

A. They are as easy to kill outside of young herds grass, which is easier.

Q. 35. Have you noticed smoke in the herds grass?

A. No, sir, I am raising it on my place, and I could not raise it at all if it hit it.

Q. 36. Four miles from the plant?

A. I don't expect it would be over three miles air line.

Q. 37. State whether or not the winds drives in that direction quite often?

A. Now, in the summertime it does, and in the wintertime,—the winter wind is from the north and northwest, then it does not bother us any, but in the summer, the smoke kind of bothers us, and drifts down the river. I am only a mile or a mile and a quarter from the river on Grassy Creek.

Q. 38. Of course, in the winter season, it does not hurt anything?

A. No, I do not think smoke hurts anything in winter time.

Q. 39. What effect has that smoke had on the timber on your place?

A. None for the last four years.

Q. 40. Does it or not, do any damage?

A. I have seen leaves damaged a little bit, but it looks like the new growth of timber, the young timber that is left, is dried, but it looks like now that it is growing as fast as young timber can grow.

Q. 41. Do you see any difference between that and the young timber you can see forty miles away from there?

1019 A. I cannot more than this, the young timber that is over four miles from the plant, has never been culled like we cull our timber close to the mines, for wood and such as that, but so far as the wood and log is concerned, I cannot see any difference.

Q. 42. You say your place is a mile or so from the Georgia line, what are the conditions in Georgia?

A. I do not think there is anything wrong in Georgia.

Q. 43. Have you been through North Georgia along there?

A. I have not been there much this spring until one day last week I went through from number twenty mine, going from Cooper Hill, to my farm, and out to what they call John Pelfrey's, and I believe John Pelfrey has got the finest young orchard I ever saw.

Q. 44. How far is that?

A. It looks like there might be three or four hundred of them that *that* might be ten or twelve years old, and about anywhere from fourteen to sixteen hundred trees.

Q. 45. Just young trees?

A. Yes, sir, about three years old.

Q. 46. Apple and peach trees?

A. Apple trees.

Q. 47. Are they healthy?

A. Yes, sir.

Q. 48. Did you notice whether they had any fruit on them?

A. No, sir, I was not in the orchard at all.

Q. 49. Was there any occasion for you to travel through Fannin County, Georgia, in 1912 and 1913?

A. How is that?

Q. 50. I said, was there any occasion for you to travel through Fannin County, in 1912 and 1913?

1020 A. Yes, I have been through Fannin County, a whole lot, that is, along the latter part of the fall. I buy a good many cattle.

Q. 51. In traveling through the county, did you notice the timber more or less?

A. Yes, sir, I noticed the crops and the apple orchard more than I noticed the timber?

Q. 52. Have you, during the last three or four years, since that acid plant was installed, observed any damage of any consequence done in Fannin County, arising from smoke.

A. No, sir, not that I would call that.

Q. 53. Were you among the gentlemen that inspected that Vestal property?

A. Yes, sir.

Q. 54. When was that?

A. That was 1912, along the last of September, I have forgotten the date. I have not the memorandum book with me.

Q. 55. How long a time were you out on that trip?

A. We were out six or seven days.

Q. 56. Did you make a thorough examination of it?

A. Yes, sir.

Q. 57. What did you find the conditions of the timber to be?

A. Well, it was green timber, Joe Vestal's chestnut timber,—he had the finest chestnut timber I ever saw anywhere.

1021 Q. 58. State whether or not chestnut timber is very susceptible to this smoke?

A. They claim it is easy killed, and it is killed off of my place.

Q. 59. When was it killed on your place?

A. When they used to run the roast heaps, that is when they hurt me the worst, when they had the roast heaps. We have better success up there since they quit that. The roast heaps was what hurt me and the rest of us in three or four miles of the plant.

Q. 60. Didn't you notice any damage to Vestal's timber?

A. What I seen, or what they showed us, so far as knowing all of Vestal's timber is concerned, I just Know what the guide said, and a few lines I knew. He told me, and I noted the lines, that is all. And I have been over part of it two or three times.

Q. 61. Regardless of whether it was Vestai's timber, where you were traveling, did you notice any damage by the smoke?

A. It looked more like fire scald than smoke to me.

Q. 62. Can you tell the difference between fire scald and damage from smoke?

A. I think so. I have seen lots of fire, fire sign.

Q. 63. What do you mean by fire sign?

A. Lapps and other things that are gathered around the other timber, and burnt.

Q. 64. State whether or not there are forest fires every year through there, through that part of Georgia?

A. Yes, sir, that is the great trouble with our country, forest fires hurting the young timber, than anything else.

Q. 65. Can you state whether or not the D. S. C. & I. Company's plant, at Isabella, ever committed any damage on your property?

1022 A. I can answer in this way. I have lived there and know the property on the south side of the Ocoee River, well, I did not know the property all the time they were roasting, but I never seen a thing bad until the Tennessee and Pittsburgh Company started. I never seen a thing killed on the south side of the Ocoee River at the time the Ducktown people were roasting, and nobody else did.

Mr. DRAKE: We except to that as a conclusion with nothing to base it on.

Q. 66. Prior to the establishment of the Tennessee and Pittsburgh Company, did you notice any timber killed across the Georgia Line?
A. No, sir.

Mr. DRAKE: We except to that because immaterial. Exception overruled and appeal prayed and granted.

Cross-examination.

By J. A. DRAKE:

Q. 67. Mr. Dalton, you say you were in Georgia last year, about the last of September?
A. No, not last year.
Q. 68. What year was it?
A. 1912.
Q. 69. And that was the same crowd that the copper company sent out to inspect the Vestal timber, especially?
A. The Isabella people, you mean?
Q. 70. Yes, the D. S. C. & I. Company?
1023 A. I was in one crowd, I do not know how many crowds they sent out.
Q. 71. You just went out one time?
A. Yes, sir, just one time.
Q. 72. At the time you were there, I will ask you if frost had not fallen?
A. In September?
Q. 73. The last of September, or first of October?
A. I do not think so.
Q. 74. There hadn't any fallen; how many days did you stay?
A. I had no idea of ever being in this, I would have to guess at that, I believe we went about the 25th or 26th of September and came in the first or second of October, as well as I recollect.
Q. 75. You said you had no idea you would be a witness?
A. No, no more than one time, I did not think I would have to just keep on and on in this.
Q. 76. How many times have you been a witness?
A. They have had me four times.
Q. 77. You mean in other cases besides this?
A. In the Vestal cases.
Q. 78. Have you been in any other case except the Vestal case?
A. I do not think so.
Q. 79. I will ask you if you have not been a witness in suit, as many as four times?
A. I have been four times.
Q. 80. In which ones?
A. I have been a witness two or three times in the Ducktown Court and that court up there.
1024 Q. 81. Relative to the same matter, the smoke cases?
A. The smoke condition, but not with regard to the Georgia trouble.
Q. 82. It was smoke trouble?
A. Yes, sir.

Q. 83. Did you make an affidavit in this original case in 1906, or '07 or '05?

A. In which suit?

Q. 84. The State of Georgia against the two companies, in the United States Supreme court, when they took the evidence by affidavit?

A. In 1901?

Q. 85. No, along about 1906, I think most of the evidence was taken.

A. 1906?

Q. 86. I think that is the time, in the year 1906, but at any rate, at the time they took the original proof by affidavits in this particular cause, when the State of Georgia moved to close those companies out, did you make an affidavit?

A. I do not recollect if I did.

Q. 87. Is there another man by your name, the same name, up there?

A. W. L. Dalton; not that I know of. I will declare I could not say whether I did or not, it sort of seems like I did, but I would not swear that I did or did not, I have forgotten.

Q. 88. Didn't you say in that affidavit that there was no damage?

A. Yes, sir, just a little. I told you I did not know that I said anything at all.

1025 Q. 89. You have forgotten what you did state?

A. I do not know what I said.

Q. 90. And this country you have spoken of being in last fall, investigating the Vestal's property, is southwest from these plants, is it not?

A. Yes.

Q. 91. Over in the——

A. Jacks River country.

Q. 92. And what do they call that mountain where they camped some?

A. Tumlin Creek.

Q. 93. Were you with them over on Frog Mountain?

A. No, sir.

Q. 94. But you were in the Jacks River country?

A. Yes, sir.

Q. 95. You were sent there especially to investigate the Vestal land, and that is what you did?

A. There was other land that we were on, but I do not know whose it was.

Q. 96. In that same country?

A. Yes, sir, in the same country.

Q. 97. Did you make any inspections through the Flat Creek country, southeast and north west from Blue Ridge?

A. No, sir.

Q. 98. I will ask you if the Tennessee Copper Company was not shut down in the year 1913, on May 17th, or along about that time?

A. They were,—I do not recollect the dates, but they were shut down in May, but I do not recollect the date. I was not

1026 working for them at that time. I quit working for them last December a year ago. My boys were working there, and

all I know is they said they were repairing and shut the smelter down in May.

Q. 99. I will ask you if in the case of Shippen Brothers Company against the Ducktown Sulphur, Copper and Iron Company, in the Federal court in Tennessee, if you did not give your evidence by deposition at Chattanooga?

A. Yes, sir, but I think it was all the same suit, the Vestal and Shippin altogether.

Q. 100. I will ask you if you were not asked these questions and made these answers to those questions? "Q. You say the Tennessee Copper Company shut down on the 17th day of May?" And you answer, "Along about that date. Q. Are you definite as to the time? No, sir, I think it was the 17th, I would not be sure just what date. Q. That is your recollection? A. Yes, sir. Q. Put all the smelters out of blast? A. Every one of them. Q. For how long? A. Until some time in June, the 8th or 10th of June, I think. They closed down for a month, but it was not quite a month." Did you state that in that case, or that in substance?

A. I guess I did. I guess if that is there, I stated it.

Q. 101. And is or not that the facts?

A. Yes, sir, they closed down sometime in May, I do not know just what day they closed down for a month, and I know they did not stay closed for a month.

Q. 102. How long did they stay closed down?

A. It strikes me they were down about twenty or twenty-two days, I do not recollect that now.

1027 Q. 103. They did shut down at that time?

A. Yes, sir, they were shut, but I do not recollect the date.

Q. 104. Did not you swear it was on the 17th of May?

A. At that time I may have known, for it was fresh on my mind, but it has been a long time and I have not been trying to keep it in mind.

Q. 105. If you stated that at that time, it was the truth, wasn't it?

A. I think it was, that was what I meant to swear.

Q. 106. Your recollection was better then than now?

A. I do not think so. I have not been trying to keep it on my mind.

Q. 107. I mean your recollection as to when it closed down last year was better on account of it being fresher and nearer to the time than it would be now?

A. Yes, I think it would. I worked for them, and we and the foreman were all good friends, and we talked backwards and forwards. I know they were closed down. I know they closed down in May.

Q. 108. I do not remember whether it was asked, but I will ask you again. What is your present occupation?

A. I am not doing anything since last December a year ago, but a little justice of the peace work.

Q. 109. How long did you work for the Copper Companies?

A. I quit the first day of December a year ago, maybe two years ago.

Q. 110. I will ask you if last May when the Tennessee Copper Company closed down, if they did not start them up very
1028 slowly, one at a time?

A. That is what the foreman told me. I was not down there, I could not tell you, only what I could see from where I lived, and they told me.

Q. 111. Was not it the 28th day of June, before they did get two or three of their furnaces into operation?

A. Something like that. They were down again last spring, I do not recollect the time.

Q. 112. And did not you swear in that same deposition, in the Shippin case, that they did not start up full blast on those furnaces until the 28th of June?

A. What time in June?

Q. 113. The 28th of June.

A. They were down in May and started up some time in June, I do not think it was as late as the 28th, if I swore it I meant to swear the truth.

Q. 114. Were you asked the question in that deposition: "Wasn't it about the 28th of June before they got them all in blast?"

A. Yes, I was asked the question, and I do not recollect just the time I answered. I was asked the question about what time they got in blast.

Q. 115. And didn't you make this answer and is not that the truth to the question, "More than likely it was. I know they started once about the 8th or 10th of June, and the other started along after that"?

A. Yes, I guess I made that answer.

Q. 116. And were not you asked this question, and made this answer to it, "Is it not your recollection that it was somewhere towards the latter part of June before they got them in full
1029 blast?"

A. Yes, sir, I believe it was, as well as I remember, they started one, then in a short time another."

A. What year was that in?

Q. 117. Did you make that answer to the question?

A. I suppose I did if it was there. They started along——

Q. 118. And was not you talking about last year, the year 1913?

A. How's that?

Q. 119. About the plant being closed down?

A. It was closed down a few days as well as I recollect, that was in May.

Q. 120. Wasn't this evidence I just read to you, relative to the year 1913, in May?

A. I thought it was 1912 you were talking about all the time.

Q. 121. What year was it they were closed down in May?

A. They were closed down year before last, closed down something like a month, twenty days or a month, and last year they

were closed down a while, but not so long, I do not recollect just how long.

Q. 122. Then they were closed down both years about the same time?

A. It was in May both years, if I recollect correctly.

Further deponent saith not.

Sworn to before me this 19th day of June, A. D. 1914.

Clerk & Master.

1030 The distance traveled by this witness, from his home to the place of taking his deposition and return, was a total of 228 miles.

1031 J. R. QUINN, the next witness called, being first duly sworn, upon examination, deposed as follows:

Direct examination.

By J. A. FOWLER, Esq.:

Q. 1. What is your age?

A. Forty-three or four, along there.

Q. 2. Where do you live?

A. I live down, I live in the Ducktown Basin, I live pretty close,—I live on my own property, the Quinn property.

Q. 3. You live in Tennessee?

A. Yes, sir.

Q. 4. How far from the Georgia line?

A. Well, a mile and a half I guess from the top of the hill.

Q. 5. How far do you live from the D. S. C. & I. Company's furnace?

A. About a mile and a half.

Q. 6. How far from the Tennessee Company's furnace?

A. About a mile and a half, right along on the road.

Q. 7. Do you live between them?

A. Yes, between the two properties.

Q. 8. How long have you been acquainted with that neighborhood in there?

A. I was born and raised there

Q. 9. Mr. Quinn, before or since the establishment of roasting ore in open heaps, what was the effect on that territory?

1032 A. I was in the timber business, cutting cord wood and selling it to the furnace to use, and I know some of the leaves would be bit.

Q. 10. When was that?

A. That was when they began roasting and smelting?

Q. 11. Did it kill the timber in the immediate vicinity of those heaps?

A. Yes, sir, it killed it around there.

Q. 12. How large a space around there was there, where it killed the timber in the beginning?

A. I was working in about a quarter or a half mile of the mill, of the roast pile, putting in wood.

Q. 13. Was the timber killed in your section?

A. Yes, sir*m* it killed some of it.

Q 14. When they erected that high stack to the Tennessee plant, what effect did that have?

A. After that was put up the grass and everything grew close, and I set out some peach trees and went to raising peach trees.

Q. 15. What effect did that have as to the timber at a distance?

A. I cannot answer that.

Q. 16. Did you ever look at the timber a few miles away from there?

A. Several years ago, is the only time. I quit the timber business, and went into the mines, quit going out into the timber.

Q. 17. Now, Mr. Quinn, getting down to the present time,
1033 what are you doing now?

A. I am mine foreman at the Tennessee mines.

Q. 18. To which company does that mine belong?

A. To the D. S. C. & I. Company.

Q. 19. How long have you been working for the company?

A. Fifteen or sixteen years, somewhere along there.

Q. 20. Do you own your own property where you live?

A. I own three hundred and twenty acres of land.

Q. 21. Do you live on this three hundred and twenty acres?

A. Yes, sir.

Q. 22. Does it, all lie between the two furnaces?

A. Yes, sir.

Q. 23. What kind of land is it?

A. It is a little rough, hills and hollows, branches running through it.

Q. 24. Do you cultivate any part of it?

A. Yes, sir, cultivate a garden around the home.

Q. 25. Is that all the property you cultivate?

A. Yes, sir.

Q. 26. What do you raise in that garden?

A. I raise corn, Irish potatoes, sweet potatoes, cabbage, lettuce, mustard, garden peas, beans, just such stuff as that.

Q. 27. Things that usually grow in gardens?

A. Yes, sir.

Q. 28. Has that garden been injured during the present year by the sulphur fumes?

A. I have noticed the leaves being bit,—looked like something had done it.

Q. 29. The leaves on what vegetation?

1034 A. On some mustard and some lettuce.

Q. 30. When was that?

A. That was last Monday a week ago, and last Tuesday, some smoke got over there.

Q. 31. You mean last Tuesday a week ago?

A. Monday, and Tuesday.

Q. 32. Where did it come from?

A. Well, I will,—I got off from the Tennessee mines to go to Copperhill to see two cusins I has coming from Chattanooga. There was a little bit of smoke up there about Isabella, but a mighty little, and there was some at Copperhill, but it was not thick, that smoke, I suppose the biggest part was coming from the Tennessee Copper Company.

Q. 33. Could you tell which way it was coming from?

A. The wind was blowing this way.

Q. 34. Was it blowing from the Tennessee Copper Company's plant?

A. Yes, sir, traveling from it.

Mr. DRAKE: I except to the question on account of being leading, and a question of fact, which he makes a supposition without any foundation to support it.

Exception overruled and appeal taken.

Q. 35. What direction was the wind blowing?

A. Let's see. I disremember which way it was going, right past by my house.

Q. 36. State whether or not the way the wind was travelling would have carried the smoke in your direction, from the Tennessee Copper Company?

A. Yes, sir, blowing right over my property this way.

Q. 37. In what direction would that wind have been to
1035 have carried the smoke from the Isabella furnace, would it have carried it towards your house, the same direction?

A. It would have carried it north, northwest.

Q. 48. How long did that smoke last?

A. About ten o'clock, I believe.

Q. 49. Was that ten o'clock in the morning?

A. Yes, sir, I left East Tennessee at eight, come to Isabella, down to the office, then come on down towards home.

Q. 50. How long did you notice the smoke?

A. I noticed the smoke from about ten on up until nearly eleven, then I got over to the passenger depot at Copperhill.

Q. 51. Did you notice it at your place after that?

A. I noticed it when I left my place and went to Copperhill, I went afoot, went over the hill.

Q. 52. Was that the last you noticed of the smoke?

A. Yes, sir.

Q. 53. Did you find any vegetation at your place that had been injured by smoke during the present season, at any time?

A. I have not noticed it at all.

Q. 54. How was it last year?

A. Last year I never noticed it at all on anything except some old goose berry bushes, some leaves, and on some little young garden truck.

Q. 55. When was that?

A. Along in the summer, I do not recollect the date.

Q. 56. Could you tell from what direction that smoke came?

1036 A. No, sir, I do not recollect the direction.

Q. 57. Was it just the one time?

A. No, that was just the one time you know. I left at nine o'clock and got back at five that evening.

Q. 58. You do not work Sundays?

A. No, sir.

Q. 59. Did you notice any damage during,—before?

A. No, sir, I don't believe I noticed anything, is my recollection.

Q. 60. Since those acid plants have been installed, have you noticed much damage to the vegetation on your place?

A. No, sir, just looks like a little scorch on the leaves.

Q. 61. Did it cause any material damage to the land or plants, or the amount the plant will produce?

A. Well, the way that is, some people say that sometimes it will bite it and it will live and sometimes it will die. It will fold over some little tender plants. Take a peach tree leaf, it will gloss that over and it won't die, but take a cherry tree leaf, and it will gloss and not die, but take a little plant and it will die.

Q. 62. Which are the plants it will bite most?

A. Mustard and lettuce and garden peas.

Q. 63. And young potatoes?

A. Yes, sir, it will bite young potatoes, Irish potatoes.

Q. 64. How about tomatoes?

A. It will bite them, and it will come again when it rains.

Q. 65. How is that about rye?

1037 A. I never noticed any except in the winter.

Q. 66. Have you an orchard?

A. Yes, I have about 350 peach trees.

Q. 67. How old are they?

A. I have one peach tree that I carried from Georgia and set out about nine years ago, it has had peaches on it seven years I will say, out of eight.

Q. 68. How is the other orchard?

A. Those, why six years ago I set them out.

Q. 69. You set them out in nineteen hundered and what, 1908?

A. Yes, sir.

Q. 70. I wish you would describe the kind of trees they are?

A. I have the early Glass May peach, I have the Sneed, that is the next peach, then the cranberry, and then the Dewey, and Carmon, the Stonewall Jackson, the Liberty and Fenson's for October. I have them that will ripen every fifteen days.

Q. 71. What is the condition of the trees?

A. They don't look like anything was wrong with them.

Q. 72. Are there ripe peaches on them?

A. Yes, sir, we have ripe ones on them now.

Q. 73. You have ripe ones?

A. Yes, sir, May peach.

Q. 74. How are those not ripe, the green peaches?

A. They are looking nice.

Q. 75. Do you see anything wrong on them at all?
A. No, sir, only sometimes they get some of the little tender leaves hurt.
1038 Q. 76. Did you produce any last year for sale?
A. Yes, sir, we had about 110 bearing trees, and sold $130.25, I believe or thirty cents and canned and give away, and fed to the hogs.
Q. 77. Did you notice any damage whatever in your orchard last year?
A. No, sir, my peaches were all clear of worms.
Q. 78. In 1912, was there any damage?
A. No, sir, I never noticed any whatever.
Q. 79. Since these acid plants have been operating, have you noticed any damage to the trees?
A. No, sir, only what I told you my trees had nothing on them to kill them.
Q. 80. Are your trees subject to insects and worms?
A. No, sir, they are clear, except one or two that have worms this year.
Q. 81. You have to spray them?
A. No, sir, I do not spray them, I have nothing to do but plow them and plant corn.
Q. 82. Are your peaches defective?
A. No, sir, just as clear and pretty. The Seathers from Knoxville said I had the nicest peaches he ever saw. He travels for the Knoxville nursery.

Mr. DRAKE: We except to that because hearsay.
Exception overruled, and appeal prayed and granted.

Q. 83. Prior to the time these acid plants were installed, did you know of any orchards growing in that neighborhood?
A. No, sir, about all I know of was across there in Georgia.
1039 Q. 84. Did anyone try to grow fruit trees in there before these acid plants were installed?
A. No, I do not know as they did, unless there might have been a few at Ducktown, a few.
Q. 85. State whether or not the fruit trees were killed in there before these acid plants were put into operation?
A. Yes, sir there were some killed. I could not swear whether they were killed by the smoke or not, or the worms or what.
Q. 86. Is there any young growth coming up in between the furnaces?
A. Yes, sir.
Q. 87. To what extent?
A. You can see young sprouts coming up out of the grass where it has been cut off.
Q. 88. What kind of grass grows there?
A. Broom sage.
Q. 89. Does it grow there every year?
A. Yes, sir, the cattle live on it.
Q. 90. Is it very tender?

A. Yes, sir.

Q. 91. In the fall season when the broom sage dies, state whether or not it is thick?

A. Yes, sir, and some people mow it and put it in beds, and use it in beds.

Q. 92. And do they burn it off?

A. Yes, sir, they burn that off from fall on up till the stuff rises in the spring and begins to grow.

Q. 93. State whether or not that kills the young underbrush?

A. Yes, sir, it kills that underbrush after the sap is in, and they burn it and the leaves fall off and die.

Cross-examination.

By J .A. DRAKE, Esq.:

1040 Q. 94. How far do you live from that *view* pike road built from the Tennessee plant to the Isabella plant?

A. I live about three quarters —.

Q. 95. Which way?

A. It goes around the,—I live this way from it.

Q. 96. Do you live east or west of that road which runs north and south in a general direction?

A. I do not know.

Q. 97. Is not the Isabella plant north and the Copperhill plant south, and you live between them?

A. Yes, sir.

Q. 98. And the road runs between them and does it run north and south?

A. I think it does.

Q. 99. Do you live east or west of that road?

A. I live east, right along there on the old road.

Q. 100. You don't live directly between the two plants, but you live about three quarters of a mile east from between the two plants?

A. I live in,—I can show you better than I can tell you.

Q. 101. Now, here is the Isabella plant and here is the Tennessee plant?

A. Yes, sir.

Q. 102. And that pike road comes down between them?

A. Yes, sir.

Q. 103. You say you live east; now, where is the Quinn property?

A. I do not know.

Q. 104. I am asking where you live, with regard to that road?

A. Show me the road, and I will sight you. I come right back over there. (Indicating.)

Q. 105. You are going from Tennessee up to Isabella, remember?

A. Yes.

Q. 106. That leads from the Tennessee plant up to the 1041 Isabella plant, now, do you live over here, this is west, do you live east or west from that road?

A. I would live right over there. I don't know, I,——

Q. 107. Then you are three quarters of a mile east from the line directly between the two plants, are you not?

A. I am three quarters of a mile from this place, and from where the pike comes along, I would be about a mile and a half from here. I would be a mile and a half.

Q. 108. What I mean, you are not directly between the two plants, north and south?

A. I do not know as I am, I mean I am right half way,—I am right on half way ground between this smelter and this smelter. (Indicating.)

Q. 109. I understand, about three quarters of a mile east, from the direction line?

A. From the pike road, yes, sir, it is a mile and a half over here, and then a mile and a half up here to Isabella.

Q. 110. As I understand you, peaches resist that smoke better than any other kind of fruit trees, do they?

A. Yes, and cherry and plumb trees.

Q. 111. You mean cherries and plumbs?

A. No, I mean plumbs and cherries and peach trees, peaches and cherries.

Q. 112. Apples cannot be grown in there at all, can they?

A. I never mentioned any apples.

Q. 113. You say that after the tall stack was built, and the roast heaps were taken away, that it took the fumes up and throws it higher, and it does not hurt you like it used to?

A. No, when it was burnt in heaps it went over on a level, and after the stocks were put up, it scattered.

Q. 114. Then, it was nine years ago you brought this peach tree you spoke of and set it out, and it has been doing well for nine years?

1042 A. Yes, sir, bearing fruit.

Q. 115. For eight years, I believe?

A. Yes, sir.

Q. 116. When were those other trees planted?

A. They were set out at two years old, and have had three crops on them now, and this is the sixth year that they have been out.

Q. 117. You mean they were two years old trees when you set them out, and you set them out six years ago?

A. Yes, sir.

Q. 118. Now, Mr. Quinn, those acid plants have not been built but about five years, have they, didn't they start those acid plants in there in 1909?

A. 1909, somewhere along there. I disremember the time of the acid plants.

Q. 119. You had had them trees out, the youngest ones a year before the acid plants were built, and the oldest ones out about four years or five years before the acid plants were built?

A. Yes, sir, I set them out for shade trees, and we found they would grow, and then I took a notion and bought some more.

Q. 120. When you found out after planting that first one, nine years ago, and they had built this tall stack, and threw the smoke

away, you went to experimenting and found that to be a good fruit country, so you bought some more peaches?

A. Yes, sir, I tried, I grew that one, and when I found it would grow, I went to work experimenting with fruit, to see what effect the smoke would have on them, and then set them out.

Q. 121. You attribute that to the high stacks drawing the smoke further away?

A. Yes, sir.

1043 Further deponent saith not.

Sworn to before me this 19th day of June, A. D., 1914.

____ ____,
Clerk and Master.

The distance travelled by this witness from his home to the place of taking of his deposition and return, was a total of 228 miles, 114 miles in each direction.

The hour growing late, adjournment was taken in the taking of depositions in this cause, until nine o'clock on Saturday, June 20th, A. D., 1914, at the same place.

Pursuant to adjournment, the further taking of depositions in this cause was resumed at the same place, and in the presence of the same parties heretofore mentioned, on this the 20th day of June, A. D., 1914, at nine o'clock, a. m.

1044 GEORGE P. DICKEY, the next witness called, being first duly sworn, upon examination, deposed as follows:

Direct examination.

By J. A. FOWLER, Esq.:

Q. 1. Mr. Dickey, where do you reside?

A. Mineral Bluff, over in Georgia, Fannin County.

Q. 2. What business do you carry on there?

A. I am a merchant.

Q. 3. How long have you been a merchant there?

A. Twenty-two years.

Q. 4. Do you hold any official position over there?

A. Not now, I do not *know*. I represented the county in 1911 and 1912.

Q. 5. In the Georgia legislature?

A. In the Georgia legislature, yes, sir.

Q. 6. State whether or not you canvassed the county at that time?

A. Yes, sir.

Q. 7. Were you over the entire county?

A. Yes, sir, over every part of it.

Q. 8. You say that was in 1912 you canvassed the county?

A. 1910, when I canvassed; I was elected and served in 1911 and '12, elected in October.

Q. 9. Have you been over the county in the last year or two?

A. Yes, sir, I have been pretty nearly over it. This year I have not been entirely over the county, but around over the county.

Q. 10. What kind of merchandise do you sell?

A. General line.

Q. 11. Do you handle fertilizer?

A. Yes, sir.

1045 Q. 12. Did you sell fertilizer to the gentleman who made the premium crop?

A. No, sir, I did not.

Q. 13. Did you see the crop?

A. Yes, sir.

Q. 14. What is the gentleman's name?

A. Addington, J. V. Addington.

Q. 15. How far was that crop growing from you?

A. About six miles dirt road.

Q. 16. What time of the year was it when you saw it?

A. It was along about the latter part of August.

Q. 17. What was the condition at that time?

A. It was looking mighty fine.

Q. 18. Was there any evidence of injury from smoke?

A. I didn't see any.

Q. 19. Did you examine the crop pretty thoroughly?

A. Yes, sir, looked it over good.

Q. 20. How high was the corn at that time?

A. It was tasseled out, and in roasting ears, part of it.

Q. 21. How much was it he made to the acre?

A. 137 bushels and fifty two pounds, I believe is what he made.

Q. 22. Was he cultivating anything else?

A. Yes, sir, potatoes.

Q. 23. What kind of potatoes?

A. Irish potatoes.

Q. 24. Did you see his potatoes,—Irish potato crop?

A. Yes, sir.

Q. 25. Do you know how many potatoes he made to the acre?

A. He told me he made four hundred bushels.

Mr. DRAKE: We except to that as being hearsay.

Q. 26. How did his Irish potato crop look?

1046 A. It was pretty well died down, you know, in August.

Q. 27. Were they early potatoes?

A. Yes, sir.

Q. 28. They had matured?

A. Yes, sir, pretty well matured, the vines seemed to be well grown.

Q. 29. You did not see any of the potatoes dug?

A. No, sir, I bought some of them in the winter.

Q. 30. Were they fine potatoes?

A. Very nice potatoes.

Q. 31. Did you see any evidence of smoke damage in that section of the country where this man Addington lived?

A. No, sir, I do not think I did.

Q. 32. That was the year 1913?

A. Yes, sir, last year.

Q. 33. State whether or not in your section of the country, around Mineral Bluff, you saw any evidences of smoke damages? That year?

A. 1913?

Q. 34. Yes.

A. Pretty little.

A. 35. You say very little, which implies there was a little, I wish you would describe what you mean by that?

A. I have seen some leaves turned brown, a little. In 1910 it was pretty bad, but nothing like half as bad as before.

Q. 36. How was it in 1911?

A. It was better than 1910.

Q. 37. How was it in 1912?

A. Well, it was still making improvements.

Q. 38. Then in 1913 you have described?

A. Yes, sir.

1047 Q. 39. Was there any difference in 1912 and 1913?

A. Yes, sir, I think, there was some.

Q. 40. Was it better?

A. In 1913?

Q. 41. Which was better?

A. 1913.

Q. 42. How was it this year?

A. I think the foliage is as pretty as I have ever seen it.

Q. 43. Have you seen anything wrong with it this year?

A. I have not seen anything wrong with it.

Q. 44. During last year, did you see any evidence of sufficient injury to cause damage to timber?

A. No, sir, I think not. I have some timber, and I went and looked over it to see if I thought it was injured enough to put in a claim, and I decided not to.

Q. 45. That was last year?

A. Yes, sir.

Q. 46. How much timber do you own?

A. I only own about one hundred acres of land. I owned three hundred acres and some odd last year.

Q. 47. Was it well timbered?

A. Yes, sir.

Q. 48. Was there any damage to the timber in 1910?

A. Some.

Q. 49. How was it in 1911?

A. Not so bad.

Q. 50. Do you think it was damaged bad enough to put in a claim in 1912?

A. No, I never have.

Q. 51. You never have put in any claim. How were the crops in that section of the country?

1048 A. The weather is mighty bad, and corn and rye are needing rain, there is a good deal of rye and they say it is the best they ever had.

Q. 52. State whether or not rye is susceptible to smoke fumes?

A. I should think so, it is a mighty tender plant.

Q. 53. If you should have any of those fumes there, they would effect the rye in your county?

A. Yes, sir, they would, but we have got the best crops of rye, and we had a mighty good crop last year, and people say it is better this year than last.

Q. 54. Have you travelled through North Georgia, Fannin County, during the present year?

A. Yes, sir, I have been out some.

Q. 55. To what extent?

A. Up to my home town, and out across from there to my other place, over about Copperhill, and down to the North Carolina line.

Q. 56. Have you noticed any evidence of injury during the present year?

A. I have not.

Q. 57. Not in that entire section?

A. No, sir.

Q. 58. Did you notice through that section of North Georgia any evidences of sufficient injury to do real damage, last year?

A. No, sir, I did not. I had a good garden, raised some mighty fine potatoes, cabbage, beans, and such stuff as that. Then, I have been from my place over to Blue Ridge, and down the line to Copperhill, over the railroad. I went from Mineral Bluff through the country, over to Copperhill.

Q. 59. Do you know whether this year book of the Morris Fertilizer Company is distributed over the state of Georgia?

1049 A. I think so. I know it is distributed over Fannin County there.

Mr. DRAKE: I except to that question and answer as being irrelevant.

Exception overruled, and appeal prayed and granted.

A. (Continuing:) Anderson is a competitor of mine and handles it there, and outside of that, I do not know.

Q. 60. You refer to the book, or pamphlet filed as exhibit number one to M. B. Roger's testimony.

(Witness examining book.)

A. What is the question.

Q. 61. I say, is that the pamphlet you refer to, as being exhibited over the county?

A. Yes, sir, yes, there is a lot of that stuff distributed over Fannin County.

Q. 62. Who sells that fertilizer?

A. Mr. Anderson, John W. Anderson. I sell Armour's.

Q. 63. Are those pictures there of that corn crop, a fair reproduction of it?

A. I think so, yes. Now, Mr. Addington has wheat on that ground, so he tells me, this year.

Q. 64. Have you seen the wheat?

A. No, I have not.

Q. 65. You do not know anything about it, only what you heard?

A. No, just what he told me.

Mr. DRAKE: We except to the book and picture, as not being identified as the picture of that corn, and as to the book being irrelevant to the issues.

Exception overruled, and appeal taken.

Q. 67. Do you know Mr. Addington?

A. Yes, sir.

Q. 68. Is that his picture?

A. Yes, sir.

1050 Q. 69. Did you see his corn crop, I believe you say you did?

A. Yes, sir.

Q. 70. Does that look like Mr. Addington's corn crop?

A. Yes, sir, that timber there shows back of it. I remember it very well being back of it.

Cross-examination.

By J. A. DRAKE:

Q. 71. Mr. Dickey, you say that is a picture of that corn field?

A. Well, that is my opinion.

Q. 72. Did you see that picture made?

A. No, sir, I did not.

Q. 73. You do not know who made it?

A. No, sir, I do not.

Q. 73. You cannot swear as a matter of fact, that this picture is one of that field?

A. No, but it resembles it, looks like his corn field. That corn, and where he is standing, everything shows up like his corn. He told me, and showed me the picture before it was put into this book.

Q. 74. You say you were around over the county some last year, and you saw some damage?

A. Very little.

Q. 75. What was that damage to?

A. What I seen was some of the leaves of the trees turning brown, I did not see none on the vegetables.

Mr. FOWLER: Complete your answer, what was it you were going to say?

A. I said I had a good garden of my own. I raised cabbage, peas, onions, and other things.

1051 Q. 76. How many times last year, would you say that you smelled smoke over there in your neighborhood?

A. I could not tell you.

Q. 77. About how many?

A. I do not know how many, I did not take any notice about it, I travelled over there several times, I could not tell you how many.

Q. 78. This year, how many times have you seen and smelt it?

A. I do not know how many times I have seen it, I saw it some two weeks ago, about two weeks ago I noticed smoke over there some, some one called my attention to it.

Q. 79. Mr. Dickey, don't you know that July and August is the time that this smoke does the worst injury?

A. Well, I don't know about that.

Q. 80. To the timber?

A. The timber shows worse than they do in the spring, but the smoke, I should think, to the rye and wheat and garden stuff would be worse in June, and the latter part of May and June.

Q. 81. Well, that is, I suppose a fact, but as to the timber, you say it is worse in July and August?

A. You can see more sign of damage then than you can now.

Q. 82. And it does not show up this early in that kind of stuff?

A. Sometimes I have seen it show up pretty early, but I cannot give the exact date.

Q. 83. Now, have you seen smoke over there, as many as half a dozen times this year?

A. I do not think I have.

Q. 84. Have you seen it five times and smelled it?

A. Well, I could not say about that, I don't hardly think I have. I don't believe I remember ever smelling or seeing it over there more than once.

1052 Q. 85. What date was that?

A. Something like two weeks ago, eight or ten days ago, something along there.

Q. 86. Was there a very noticeable amount of it there on that date, to the smell?

A. Right sharply. The effects of that will show up on the timber later on, I suppose. It shows up pretty quick though.

Q. 87. After it strikes it and especially on young vegetables, it shows up quicker?

A. Yes, sir, it shows up in vegetables quicker than it will on timber.

Q. 88. I will ask you Mr. Dickey, if that smoke don't strike the top of the timber, and effect it sooner than it will that which is not protected by foliage all through there?

A. Yes, it will commence at the top of it.

Q. 89. And if a garden should be protected on all sides by trees, or on one side, would not that protect the garden from the effects of it more than it would if it was exposed?

A. I suppose it would. I could not say.

Q. 90. Have you been over Blue Ridge in the Flat Creek country and inspected the oat crop in there?

A. No, sir, I have not.

Q. 91. Have you inspected the oat crop around you this year?

A. The oat crop is mighty sorry. As it was dry, it did not do any good.

Q. 92. Don't you know as a matter of fact, if they have abandoned practically raising oats in that neighborhod, on account of this smoke?

A. I do not know that, though they raise more corn than rye. That never was a good country for oats. They raise a heap of rye and corn in there.

1053 Q. 93. Don't you know they do not raise oats at all, because they are so susceptible to the smoke?

A. I do not know. I pay more attention to the rye crop than anything else. We ship a good deal of rye.

Q. 94. Do you know of a single crop of oats in that whole Flat Creek country?

A. I do not know of any.

Q. 95. Don't you know that the thrashers that go through there, do not thrash enough oats to take account of it?

A. I do not know about that.

Q. 96. Don't you know, as a merchant, you cannot buy oats in that country?

A. I hardly ever buy oats, we generally have them shipped to us.

Q. 97. And don't you know that it used to be the thrashers would thrash many oats through that country?

A. I do not know about that. I never did thrash any.

Q. 98. Were you ever with the thrashers in there?

A. Very little.

Q. 99. Away back yonder fifteen and twenty years ago?

A. I do not know. I could not tell what they done about that.

Q. 100. How long have you lived in that neighborhood?

A. I have lived there all my life.

Q. 101. How long have you been a merchant, Mr. Dickey?

A. Twenty-two years.

Q. 102. Did you ever back in the first of your mercantile experience buy oats at that point?

A. No, sir, I generally had my oats shipped from away from there.

Q. 103. Did you ever see oats growing in that country, at that time?

1054 A. Yes, sir, some, and there are some growing there now.

Q. 104. Did not they grow a great deal more oats then than they do now?

A. I could not say about that.

Q. 105. Who is raising oats there now?

A. I could not tell you.

Q. 106. How many fields have you seen this year?

A. Why I have noticed three or four patches.

Q. 107. Well, who owns any of those, you know everybody in that country?

A. Mr. McCann owns some.

Q. 108. Which one?

A. H. M. McCann.

Q. 109. H. M. McCann?
A. H. M. McCann.
Q. 110. Where does he lives?
A. He lives in Mineral Bluff, in the edge of Mineral Bluff.
Q. 111. Who else?
A. I could not say, but I have heard people talking that this season's oats were mighty sorry, but Mr. McCann says he has a good patch, and people are talking about them that says they are. I can see them from the public road, but I have never been in his patch.
Q. 112. Mr. Dickey, did you ever make an affidavit in the original case, this original case?
A. In this case?
Q. 113. For the copper companies in 1906?
A. I do not think I did. I am not positive, but I do not remember if I did.
Q. 114. Well, when the smoke damage was the worst in that country, I will ask you if then there were not parts of the country where they would have good crops?
A. Yes, sir.
1055 Q. 115. And in some places it was much worse affected than in others, was it not?
A. I think they were, yes, sir.
Q. 116. And that is the history of that smoke damage?
A. Yes, sir.

Redirect examination.

By J. A. FOWLER, Esq.:

Q. 117. What effect does dry weather have on the oat crop?
A. When it is dry weather, the oats won't grow, and get any height up there, it is sorry.
Q. 118. The oat crop in dry weather, usually takes the rust, doesn't it?
A. I do not know about that. They do not grow up and make any height so as to do any good though. The oat crop in our country, never has been good.
Q. 119. Is North Georgia land well adapted to raising heavy oats?
A. No, sir.
Q. 120. And it is a visible crop for that section of the country?
A. I do not think so. I farmed some before I went into the merchandise business. I bought some oats, and sowed them.
Q. 121. Did you ever make any returns out of them, of any value?
A. No, sir, it did not pay me.
Q. 122. An oat crop is the least profitable crop, unless the ground is especially adapted to it?
A. Yes, sir.

Further deponent saith not.

Sworn to before me this 20th day of June, A. D., 1914.

_____,
Clerk & Master.

1056 The distance travelled by this witness from his home to the place of giving his deposition was a total of 272 miles, including his return, or 136 miles in each direction.

1057 J. H. QUINTRELL, the next witness called, being first duly sworn, upon direct examination deposed as follows:

Direct examination.

Questions by J. A. FOWLER, Esq.:

Q. What is your age, Mr. Quintrell?
A. I will be fifty four years old the eleventh day of November.
Q. Where do you live?
A. I live at No. 20 Copper mine, it is in Fannin County.
Q. Georgia?
A. Yes, sir.
Q. How long have you lived in that section?
A. I have been, well, I was principally raised in Fannin County. I have lived there, my father moved there when I was a boy twelve years old. We lived there until the closing down of the mines, back years ago, and I left there and stayed away until the mines started up again, and I have been living there now twenty-two years.
Q. Did you ever work for the Ducktown Company?
A. Yes, sir.
Q. When did you work for them?
A. I worked for them, it has been twenty years ago.
Q. Have you worked for them since?
A. No, sir.
Q. Did you ever work for the Tennessee Copper Company?
A. Yes, sir.
Q. When did you work for them?
A. I worked for them nine years ago. It has been nine years. Well, I will say eight years since I have worked for the Tennessee Copper Company.

1058 Q. Have you been living right around the Tennessee Copper Company's plant?
A. Well, I have been living for twenty-two years within a mile and a quarter of where the smelter plant now stands.
Q. Do you know when they installed the acid plant in the Tennessee Copper Company plant?
A. In the D. S. C. & I. Company plant, or the Tennessee Copper Company's plant?
Q. I mean the Tennessee Copper Company's plant?
A. In 1908.
Q. Do you know whether or not since that time they have enlarged the capacity of the acid plant?
A. Well, they have enlarged them, they have built some two or three more chambers, to their plant.
Q. How many chambers did they first have?
A. They first built two chambers.
Q. That was in 1908?
A. In 1908.

Q. When did they make the next increase?
A. I think the next year they made some to it, but I would not be positive.
Q. When did they make the next increase?
A. Year before last they made their last improvement.
Q. How many chambers are they operating now?
A. They are operating six chambers.
Q. So they begun with two, and have increased up to six?
A. Up to six, yes, sir.
Q. They have had six for how many years now?
A. For two years.
Q. Have you been through the plant at Ducktown?
A. I never have been through the plant at all, I was up to the plant, I was up to the plant a month or so ago, but never have been through the plant.
1059 Q. You have been in the acid plant?
A. Yes, I have been at the plant, I never have been through the plant, to tell anything about how it is inside.
Q. Mr. Quintrell, How far do you live from the plant of the Tennessee Copper Company?
A. Two miles from the Tennessee Copper Company's plant.
Q. How far from the Ducktown Company's plant?
A. Two miles.
Q. Do you own the place on which you live?
A. No, sir, it is owned by what is known now as the Southern Reduction Company, of Boston.
Q. Where is the mine No. 20, relative to your home?
A. It is about two hundred yards higher up on the hill above my house.
Q. State whether or not you had some pictures taken of the different localities right around near your home, there?
A. Yes, sir.
Q. When did you have them taken?
A. I had them taken in March—I had them taken in last March.
Q. Why did you have those taken?
A. Well, the reason why, just exactly why I did have these photographs taken, I noticed in our home paper whereby the State of Georgia had asked for and got a bill against the Company, an injunction bill, claiming that it was killing out all the forests, and vegetation, and I knew that it absolutely was not so, and that is exactly the reason I had those taken.
Q. Who did you have to take them?
A. I had a young man named Johnnie Sears.
Q. Was he the photographer there in Copperhill?
A. No, he lived in Georgia, up at Epworth, Georgia.
1060 Q. Did either one of the Copper companies have you do this?
A. Neither one gave me a dollar themselves, nor did either one of them knew I was going to do it, until after I had it done, and carried them over and give them to Mr. Rennick. I never spoke to him about it until then.

Q. How long have you known this locality here represented by these pictures?

A. I have known it all my life.

Q. I show you picture number one. I wish you would state what particular locality that represents?

A. That picture there in 1900, Judge Howe purchased the property from some parties in Atlanta. This number one picture was an old field when he purchased the property in 1900, and when it was bought for mining purposes the field was turned out, and that growth of timber there on that old field has grown there since 1900, the year 1900 it was naked.

Q. That picture is introduced as evidence by the defendants, and marked as Exhibit No. 1 to the deposition of Mr. J. H. Quintrell.

Q. When was that field last plowed?

A. Well, I suppose that it was plowed the year before he bought it. I would not say about that. I would not say about the exact time.

Q. Was there any growth of timber whatever on that place in 1900, on that spot?

A. On this place yere, no, there was an old fence around it, when Judge Howe bought it.

Q. Where is the spot represented in the picture, with reference to the mine No. 2?

A. It is about two hundred yards from the mine.

Q. In what direction?

A. Well, it is kinder south, well, it is a field, north, it is rather north from the mine.

1061 Q. I show you picture number two. I wish you would state what spot is represented by that picture?

A. Number two, this picture here is taken where there was a heavy growth of timber when Judge Howe bought the property. He had it absolutely all cleaned off. Cut off all the growth of timber and used it for mining purposes. All that was used for mining purposes. At first my father was in charge of the mines. He used it for mining purposes, for the boilers.

Q. State what year that place was barren?

A. This was cut off, finished cutting in 1903.

Q. Was there any underbrush of any consequence at that time?

A. No, very little underbrush, because this lot of timber had been owned by some parties in Atlanta, and the old original growth of timber had never been cut off of it. While we have in our County most all of the timber that is in reach of Ducktown is what you might term it, second growth of timber, for right after the war it was all cleaned off, and it has grown up during the closed season.

Q. Take number two——

Mr. Fowler: Picture number two is introduced by the defendant as Exhibit No. 2 to J. H. Quintrell's deposition.

Q. Since which year have these trees that appear in this picture number two grown?

A. Since 1903.

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Q. Since 1903?
A. Yes, sir, since 1903.
Q. I show you picture Number three, and will ask you to state what particular point is represented by this picture?
1062 A. Number three. This is the photograph of our mine.
Q. You mean Mine No. 20?
A. Mine Number 20, a photograph of the mine. That is where our boiler house stands. This is a picture of the mine. We opened up shafts and sunk them in here, and all heavy timber around was absolutely cleaned off, and the growth of timber cut off that was large enough to cut off for the mines, and used then, and these trees have grown since 1903.

Mr. FOWLER: Picture Number three is introduced by Defendant, and marked Exhibit No. 3 to J. H. Quintrell's deposition.

Q. I do not believe I asked you how far the opening represented in picture number two is from Mine No. 20?
A. It is a quarter of a mile, I guess.
Q. In what direction?
A. It is north.
Q. I show you picture number four. State what point is represented by that picture.
A. This picture is taken right down there, down the branch, it is mighty near due north from the mine. It is about, this picture here is north one-half mile from the mine.

Mr. FOWLER: Picture number four is introduced by defendant, and marked Exhibit No. 4 to Mr. Quintrell's deposition.

Q. Since that date, since what date, has the timber represented in that picture grown?
A. Since 1903.
Q. I notice two or three old-looking trees. Were they there in 1903?
A. Yes, sir, some old scrub trees. They were there. Too rough for the wood-choppers to cut down.
Q. I show you picture number five. State what point is
1063 represented in that picture?
A. This picture is taken about one hundred, I suppose it would be two hundred yards below the mines, just below my dwelling house, where I live there on the property. Probably two hundred yards from the mines. Where this photograph was taken, when Judge Howe had it cut off, it was a heavy growth of poplar and oak timber, right here. That growth is now gone.

Mr. FOWLER: Picture No. 5 is introduced by the defendant, and marked Exhibit No. 5 to the deposition of J. H. Quintrell.

Q. Since what period has the timber represented in that picture grown?
A. Well, about the same time as the rest of it. It was all cut off, the biggest part of all the timber was cleaned off in 1903, and off of all of it in 1904. We had to go to buying poles.

Q. What kind of trees are those represented in the picture?

A. There is pine trees there, there is maple, white oak, and red oak, all kinds.

Q. Have those maples at that point grown since 1903?

A. Well, they might have been there too small to have chopped. I would not say how that was.

Q. Mr. Quintrell, are those pictures a fair representation of the growth in the entire section around there?

A. Yes, sir. I had the pictures taken, I was with the man. I didn't take him back at the best places. Number one, there, shows the best picture, it is all forest that has grown in the old field, and that timber has grown up seems like faster than where we had the last timber cut off.

Q. I believe you say that was an old field in 1900?

A. Yes, sir.

1064 Q. State whether or not, Mr. Quintrell, there has ever been a time when the growth of vegetation was entirely stopped in that section of the country?

A. No, sir, never has been.

Q. Mr. Quintrell, I wish you would state the difference in the rapidity of growth of this timber from 1900, in the one picture, and the other four pictures of 1903, up until say, 1909, and its growth since that date?

A. Well up to 1909, I will say, in 1909 the smoke got over on the timber ever now and then. It would come over and turn the leaves brown on the timber, and it had apparently stunted the growth of the timber, but since 1909 the acid plants have been put up, and this timber has taken on a new life, and is in, today, as healthy condition as any timber I find in all my travels around the country.

Q. Through what parts of the country do you travel?

A. I travel out in North Carolina. Last summer I was called five hundred miles from Ducktown to open up a copper mine for some New York people, down in towards the coast. And I travel in most all directions. In Alabama, all down among the furnaces, anywhere my company has property and operates mines.

Q. In consequence of this smoke damage in your section, in travelling over the country, do you, or not, observe the timber?

A. Yes, sir.

Q. Have you noticed the difference in the growth of timber elsewhere and this timber here?

A. Not a particle of difference. I could not tell there today, you could not tell, one particle of difference in our growth of timber there today and in any growth of timber that I have travelled through, with the exception of one thing, you will find in our neighborhood, for four or five miles around there, you will

1065 find trees and saplings, with the tops of them dead. They had started to die before the acid plants were put up, and I can show you there on a lot of land adjoining me, on what is called Nineteen, owned by a gentleman, bought for mining purposes, the gentleman lives in the country, I can show you thousands of young sapling trees on that today that started to die, the tops of the trees

are dead, the tops died, but since the acid plants have been put up there is new live in them trees, and new branches have sprung up, and last week I was over there just walking around, generally, so I took my knife and whittled through the bark on some of the trunks of trees and they appear to be healthy and growing big, while the tops of these saplings are dead.

Q. Have you noticed any additional branches that have died in the last few years?

A. I have not.

Q. State whether or not the conditions which you have just described are illustrated by some saplings in picture three?

A. Yes, sir, you see these trees right there, now, you see these largest trees, the tops of them trees is dead, and there is new branches put out on the trunks of these trees, and they are living today.

Q. Now, in picture four, isn't the top of that scrub oak dead?

A. In this picture four, this died back when they were, I would judge, I would not say as to the exact year when it died, but my judgment is that it died when they were smelting ore green. It done some damage the year they smelted green ore, in our section of the country, a longer distance than I ever knew.

Q. Now, does not picture number two (Exhibit 2) show one or two old trees?

1066 A. Yes, sir, it does.

Q. You say the timber represented in picture one has grown entirely since 1900?

A. No, sir.

Q. That does not show anything of that kind?

A. No, it was an old field when Judge Howe bought it from some parties in Atlanta.

Q. Now, Mr. Quintrell, did you observe the crops through your section there for the last two years or three years?

A. I have. I have made, I have farmed a little every year myself, for sometime.

Q. State whether your father owns a farm?

A. He does.

Q. Where is his farm located?

A. It is a mile and a quarter east of the Tennessee Copper Company's plant.

Q. Does, or, not, the wind drift in that direction quite often?

A. Quite often.

Q. How large is his farm?

A. My father is dead. Now, we have something over four hundred acres od land.

Q. Is any part of it kept in cultivation?

A. Yes, sir.

Q. How much of it?

A. We have thirty or I guess we have forty acres there now in cultivation,—forty acres, I guess.

Q. What kind of crops do you raise on it?

A. We raise corn, vegetables, and peas, the parties that live on the farm do. I believe, we have it rented out.

Q. Have you been in the habit of going through crops, and seeing their condition?

A. I have been through them, yes several times.

1067 Q. During last year, was there any damage to the crops on your place?

A. I would not say for sure. I was not on the place last year during crop time, but if there was any damage on it, I never heard it mentioned by the parties who lived on it. I never heard anything.

Q. How was it year before last?

A. It was all right.

Q. And how is it this year?

A. This year the crops, so far, are all right.

Q. Has the timber been affected on that place for the last two or three years?

A. No, not that we can tell.

Q. Have you observed the timber?

A. Yes, sir.

Q. Do you know whether or not, Mr. Quintrell, of any acid smoke having escaped from the acid plant during the present year?

A. Yes, sir.

Q. When did that occur?

A. It occurred on the eighth.

Q. The eighth of June?

A. Yes, sir.

Q. This month?

A. Yes, sir.

Q. I wish you would tell what you know about it.

A. Well, on the eighth day of this month I taken my daughter from where we lived over to Isabella to spend a week with her grandmother. I stayed in Isabella until twelve o'clock. At twelve o'clock I left Isabella to come back to Copperhill. Well, when I got in sight of the Tennessee Copper Company's plant, I suppose that was about half past twelve o'clock, it would be my judgment, I could see the fumes coming out of the big stack, and taking roght down

1068 towards Fighting Town Creek, right towards the Georgia State line.

Q. Was that towards Epworth?

A. Towards Epworth, towards the State line, and I know because I am acquainted with the smoke around there, all my life, I was satisfied in my own mind from the looks of the smoke that there was something wrong, though I did not know what it was.

Mr. DRAKE: I except to that evidence as being an opinion without anything stated on which to base it.

Exception overruled; appeal taken.

Q. Go on, Mr. Quintrell?

A. So I went on to Copperhill, across the river there, and I had got back down the river, there, right down even with the Company's plant, and turned up what is known as Fighting Town Creek, going home, and I noticed the plants and the little sprigs along, now the first thing that called my attention to notice that it

was doing damage was a field of corn, and I went on up on top of the hill up to Fryetown, and saw the smoke had come over from the stack before I reached there, and it cleared off and the sun showed out, and it showed the effect of the smoke on my brother-in-law's garden, on his beets, and his beans. I could see that they were bit by the smoke.

Q. What time of the day was that?

A. That was about one o'clock, I guess.

Q. On Monday?

A. Yes.

Q. Monday, the 8th?

A. Yes, sir, Monday the eighth.

Q. Did any of that smoke escape from the Ducktown Copper Company's plant?

A. It did not, for I come——

Mr. DRAKE (interrupting): I except to the answer because he states no fact upon which to base any such an opinion; it is purely an opinion.

1069 Exception overruled, appeal prayed and granted.

Mr. FOWLER: Go on.

WITNESS (continuing): I come direct between the two plants from the ridge road, directly between the two plants, and it was as clear as it is right here, no smoke between them.

Q. Was the Ducktown plant in plain view to you?

A. Right down in the hollow below me.

Q. North of you?

A. North of me.

Q. And the other plant was south of you?

A. South of me.

Q. And could you see that big, high stack?

A. Oh, yes.

Q. Could you see the smoke coming out of it?

A. Yes, sir.

Q. Did you, or not, see the smoke going in the direction in which you saw the damage?

A. I saw it going in that direction, and as I went on and had started on up Fighting Town Creek, the smoke was taking in that direction from the stack, probably five hundred feet, maybe one thousand feet from the stack, it was hitting the ground.

Q. That is the time when it parched the corn?

A. Yes, that is the time it cut the sun off of me, and made a shadow, and the smoke was going directly over my head, and shut the sun off of me.

Q. And that is the only time you ever knew of damage being done by the furnace this year?

A. That is all I know of and saw myself.

Cross-examination.

Questions by J. A. DRAKE:, Esq.:

Q. Mr. Quintrell, what is your occupation?

A. Well, my occupation is, I am in charge of what is
1070 known as No. 20 Copper mine, known now as the Southern Reduction Company.

Q. That mine, as I understand you, Mr. Quintrell, is located in Fannin County, Georgia?

A. Yes, sir, it is.

Q. How far from the Tennessee State line?

A. Well, it is a fraction over half a mile. I could not say the exact fraction over the half mile.

Q. Is that mine being operated at this time, and if so, how long has it been in operation?

A. It is not in operation now.

Q. Not in operation now?

A. No, sir.

Q. How long has it been since it was operated?

A. It has been seven years.

Q. You are there in charge of that property, are you?

A. Yes, sir, I am.

Q. How much acreage has that Company got?

A. One hundred and sixty acres.

Q. One hundred and sixty?

A. Yes, sir.

Q. You have worked around and about these copper mines all your life, have you not, Mr. Quintrell?

A. I have.

Q. Are you not an expert on smoke, sulphur smoke, and the effect of sulphur smoke on growing vegetation?

A. I do not know that I am an expert. I have good enough sense to know when the smoke has killed a green leaf, or killed a bean, or anything of that kind.

Q. You are expert enough to know when smoke kills anything, are you not, you can also tell that after it has been killed?

A. I can tell when it has been killed by smoke.

1071 Q. You are expert enough to that extent, you know what smoke will do?

A. If you want to term it expert, it is all right.

Q. You are very much interested in the operation of these copper companies, are you not?

A. No, not any further than that right be done.

Q. You took enough interest to go out and take pictures without anyone soliciting you?

A. I done that much, simply because I knew as well as I knew that I was a living man, that the copper companies were alleged to have killed vegetation, and I wanted to show to the people of Georgia as much as to the Company, that probably had never been up there to see and were talking probably about their places being affected, that it was not killing out all the forests and vegetation of our country.

Q. You are not, then interested in the copper companies, or in the working of copper companies in any manner?

A. Yes, sir, I am.

Q. I will ask you if your living has not been made by and from and through these copper companies for the last several years, practically?

A. No, not altogether. Part of my living is every year now, for the past twenty years, I have more or less crop every year.

Q. When was it you made that trip of five hundred miles for some copper company?

A. Last year, Last June.

Q. Then you were in the employ of a copper company last year?

A. Yes, sir.

Q. And went to North Carolina?

A. Yes, sir.

1072 Q. Five hundred miles from home?

A. Yes, sir.

Q. How long were you in their employ last year?

A. I stayed out from there from June until, I think, about the tenth of July.

Q. How long have you been in the employ of any other copper company this year?

A. I am in the employ of one right at this present time.

Q. Which one?

A. Of No. 20.

Q. *Have* long have you lived there on their property?

A. Right there, right at the mines, I moved there in December.

Q. How long have you been looking after their property for them?

A. Six years, six years this coming August.

Q. Now, the smoke that you saw the day you speak of, you saw that coming from the Tennessee Copper Company?

A. Yes, sir.

Q. Which way was th*w* wind blowing?

A. The wind was blowing from the northwest.

Q. Towards the southeast?

A. Towards the southeast.

Q. I will ask you, Mr. Quintrell, if smoke had been coming out of the Ducktown Company's plant and carried up into the air, would not the same wind have driven it right over towards the Tennessee plant, and right on into the State of Georgia?

A. It would, provided they had been making any quantity of smoke, but the atmosphere was as clear, the sun was shining as bright, a good deal more so than it is today, between the two plants. There was no appearance of smoke to be seen between the two plants.

1073 Q. Didn't you state on your direct examination that there was no smoke escaping from the Ducktown Company that day?

A. No, sir, I did not say that.

Q. Was there?

A. Yes, sir, there was smoke coming out of their stack.

Q. Was it, or not, coming out and ascending into the air?

A. Well, it was when I passed coming up from—the last I could see of their plant, there was not smoke enough that it was rising one hundred feet, that you could tell one hundred feet above the stack that there was any smoke.

Q. There was a volume of smoke belching out of the Ducktown stack?

A. No, sir, there was not any volume; there was just a small quantity of smoke.

Q. A small quantity, what do you mean by that?

A. There was no large amount of smoke; there was smoke so that you could tell that there was smoke coming out of their smoke-stack.

Q. And whatever smoke you did see ascending into the air, would be driven by that same wind and carried on and be mixed with the Tennessee Company's fumes, and be carried on into the State of Georgia, would it not?

A. Well, I do not know. I suppose it might, provided it was making enough to reach that distance.

Q. Do you know enough about the smoke, Mr. Quintrell, to know whether or not the atmospheric conditions make a difference in the effect of the smoke?

A. No, sir, I do not.

Q. You do not know whether a certain damp, lowering day will cause the smoke to settle down worse than on a bright clear day?

A. Yes, I know that. I know when the atmosphere is heavy, the smoke will settle down more around the plant and in our
1074 neighborhood than it will on others.

Q. And when it is a dry, clear day, it rises up and you cannot see it so well?

A. How?

Q. And it comes out and goes up in the elements and higher up than on a damp, heavy day?

A. That is right.

Q. Now, coming to this timber you have spoken of on these photographic exhibits: Exhibit one, you say that timber has grown since 1901?

A. Yes, sir, since 1901.

Q. How old is that timber?

A. That timber is eleven years old, probably eleven, thirteen years old.

Q. Wouldn't it be about fourteen years old?

A. Yes, fourteen years old, pardon me.

Q. It would be about fourteen years old, the biggest of it, at least?

A. Yes.

Q. Did you see any of the effects of smoke damage on that timber on Exhibit No. 1?

A. On that timber there, I do not see any effect at all, that timber there is pine and most of it is white oak.

Q. Pine and oak, white oak?

A. Yes, sir.

Q. Then this timber grew during the time of the very worst smoke in that country, did it?

A. It did.

Q. Have you been a witness for these companies at any time precious to this?

A. I never was a witness for them in any case before.

Q. Did you make an affidavit in the original case?

A. I did.

1075 Q. I will ask you if in that case you did not state that the companies were not doing any damage over there, that was in 1906?

A. I did not understand you exactly. How is that, explain it again?

Q. Did you make that affidavit in 1906?

A. Which affidavit?

Q. The affidavit in this case, the original cause.

A. In this case about what?

Q. I meant, Mr. Quintrell, in the case where the State of Georgia was moving in the United States Court, originally, to close these copper companies down, and the State of Georgia took evidence by affidavit, and the copper companies took evidence by affidavit, and now, as I understand you, you made an affidavit for the companies?

A. No, sir, I do not know as I did. I never made any affidavit then that they were not doing any damage.

Q. Did you make an affidavit at the instance of either of the Copper companies?

A. No, sir, I do not know as I ever did.

Q. Well, if you have made an affidavit, you stated the conditions were good in 1906?

A. In 1906, why, no, I never said they were good, because they were not good in 1906.

Q. Could you, Mr. Quintrell, not have exhibited this young timber that was six years old in 1906 as evidence that there was no damage?

A. In 1906 the smoke was coming on this timber, mighty near every day.

Q. You just stated it had not been hurt by smoke?

A. I do not know that I stated it had been hurt by smoke. The smoke might have had some effect on it when it fist got up.

1076 Q. Don't you know that the timber effected in these other photographic exhibits is old timber that is more than fourteen years old?

A. There are two trees there that are scrubby trees, and they were too rough for the wood-choppers to cut down.

Q. What picture is that you are talking about?

A. This is number four, the rest of that timber has grown up since 1903, since Judge Howe had it cut off.

Q. Is not the young timber there free from smoke damage?
A. It is free now from smoke damage.
Q. That is the question I am asking. When the smoke hits the leaves when is the first effect visible?
A. When the smoke first hits the leaves?
Q. Yes, sir.
A. It is, the first thing you can tell on that leaf, it is turned red around the edge of the leaf.
Q. It turns red around the edge?
A. Yes, sir, around the edge, and then it crisps up.
Q. Which way does the effect work, from there back towards the stem?
A. It works back toward the stem, and works out and strikes the tree, and it works down the tree.
Q. In other words, do you mean it works the top of the tree first, and kills the top?
A. It kills the top all over, and as the sap goes down, it kills the tree.
Q. I will ask you, Mr. Quintrell, if the big timber don't protect the little timber in it, and protects it from the effects of the fumes to a great extent?
A. Well, there is very little big timber in our neighborhood or country, outside of about three lots of land that I know of, there is no big timber whatever, it has all been cut off.
1077 Q. I am speaking of when there was big timber.
A. In the big growth of timber, in the old original growth, there was but very little undergrowth on it at all.
Q. Then you do not know what the effect would be that I asked about, about the big timber protecting the little timber under it?
A. No, not the exact effect.
Q. Do you know what effect a Mountain standing between timber and these plants has on the growth of timber?
A. I do not.
Q. Do you know whether timber is in better condition on the opposite side of the mountains facing the plant, or on the side facing them?
A. Well, the timber,—to illustrate that, I will just say that two years ago, I was across the mountains over on what is called Jacks River. I saw going out to Jacks River at what is known in our country as the Dunn Mountains, I saw timber, that is, timber nearest the mines, I saw timber out there that I was thoroughly satisfied had been killed in time by the smoke. After I crossed Frog Mountain, over on Jacks river, there is quite a difference, quite a lot of dead timber, and quite a difference in the location of the two timbers.
Q. Now, where the timber was the worst affected, was that facing the plant, more than the other?
A. Yes, it was.
Q. I believe I did not ask you for what copper company you made that trip into North Carolina?

A. It was called the Virginia, Tennessee & North Carolina Copper Company.

Q. Who is manager of that Company?

A. The manager of it is a man by the name of Mr. White, of Knoxville.

1078 Q. Where do they operate?

A. They were not really operating anywhere. They had an option on some property in North Carolina.

Q. They were making preliminary developments?

A. Yes, sir, they sent for me to come out and open it up, just to try it.

Redirect examination.

Questions by J. A. FOWLER, Esq.:

Q. Has that Company with which you were working at that time any connection with either the Ducktown or Tennessee Company?

A. Not a bit.

Q. Speaking with reference to that timber, that you say you saw that had been killed when you made the trip two years ago. How long did that timber appear to have been dead?

A. It appeared to have been dead two or three years, three or four years.

Q. You spoke a while ago, in answer to a question propounded by counsel, of having made an affidavit. To what did you have reference?

A. Of having made an affidavit?

Q. Yes, you were asked if you had made an affidavit in this case, and you said that you had?

A. If I did, I made a mistake, because I have never made an affidavit for the Company, or against the Company. This is my first time to be up before the Court for either party.

Recross-examination.

Questions by J. A. DRAKE, Esq.:

Q. Did you ever sign a petition that was called a petition?

1079 A. I have signed several petitions asking the State of Georgia to permit the Ducktown Copper Company to run on.

Q. Well, that is what I referred to when I speak of affidavit.

A. I have done that.

Q. And were not those petitions sworn to?

A. They were not sworn to by me.

Q. Before a Notary Public?

A. No, sir, they were not sworn to by me.

Q. If they were sworn to, you did not understand so at the time?

A. No, of course they were presented to me at my request as to which I wanted, the mines to work or stop working.

Q. You said in this petition that they were not doing any damage at that time?

A. I do not think I was asked in the petition what I thought.

Q. Didn't this petition go on and recite that the copper companies were doing no damage in Georgia, and for that reason asked the State of Georgia not to close them down? And was not that at the very time you now say the damage was worst?

A. The petition that I signed, to the best of my recollection, I would not be positive, but to the best of my recollection, the petition was asking the Governor of Georgia not to close the mines, asking the favor of the Governor to permit the mines to operate.

Q. For what reason did you base that request?

A. On the reason that I thought the mines were a great deal more benefit to the State of Georgia than the little bit of farming and timber that we had in there.

Q. And you claim that if they had destroyed the timber, it would not be worth as much as the copper companies?

A. The work the copper companies is doing, has given the
1080 men in work more than all the rest of Fannin County and what it has in it.

Q. From your standpoint, you think that they have a right to destroy all the North Georgia property in order to operate their mines?

A. I think if the companies had continued by not building acid plants, I do not think it would have been right to destroy the country, but the acid plants were built and it is doing our country no harm at this time.

Further deponent saith not.

Sworn to before me, this 19th day of June, 1914.

____ ____,
Clerk & Master.

This witness travelled a total of two hundred eighteen miles from his home to the point of giving his deposition and return, or one hundred *eighteen* miles in each direction.

1081 W. M. BOWRON, the next witness, having first been duly sworn, deposed as follows:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. Mr. Bowron, what is your age?

A. Seventy four, nearly.

Q. 2. Where — you born, raised and educated?

A. I was born in the north of England, educated at two or three different schools, and finally took my education at the University of Edinburgh.

Q. 3. Have you or not in your life made a study of the erection of sulphuric acid plants and the conversion of what is popularly known as sulphur fumes, or sulphur smoke, as generated up in the Ducktown Basin by the smelting companies, into sulphuric acid?

A. I was Assistant Chemist at the sulphuric acid works on the Tyne, and since then I have applied the knowledge I gained there under altered conditions to the gathering and collection of these sulphuric acid fumes in the Ducktown Basin.

Q. 4. The Tyne is a river in England?

A. Yes, sir.

Q. 5. Who is the accepted author of text writer, today, *for* if one there be, on generation, reduction, production of sulphuric acid, and its conversion, and the conversion of sulphur fumes into sulphuric acid?

A. George Lunge, who is Professor of Technique at the University of Zurich, in Switzerland.

Q. 6. Are you personally acquainted with Prof. Lunge?

A. Yes, sir, for some years I was his chief assistant.

1082 Q. 7. Where was he working at that time, where were you and he working?

A. At South Shields on the River Tyne at the sulphuric acid works.

Q. 8. How long since you came over to the United States?

A. The last time I came over in 1872.

Q. 9. What company, or companies have you been associated with as Chemist since coming to the United States of America, and for how long?

A. As Chemist I was with the Tennessee Coal, Iron & Railroad Company for three different periods totalling ten years.

Q. 10. What other service have you seen that would fit you to speak as to the generation of sulphuric acid as it is now generated, and the reclamation of the fumes, or the blighting effects of the fumes, as they, are generated in the Ducktown Basin, by the Ducktown Copper Company and the Tennessee Copper Company?

A. I was familiar with the region from the fact that I was buying up lands in North Carolina and I had to go through Ducktown going backward and forward, and being acquainted with the sulphuric acid industry, and having talked with the General Manager on the subject, conversion of its fumes into sulphuric acid I had strong interest in the subject besides which I was selected by the Governor of Georgia at one time, at that time the Hon. Joseph Brown, to go up and make a special report as to the facts of the whole subject. I made such report and presented it to him in 1910.

Q. 11. Were you selected by His Excellency, Governor Joseph Brown of Georgia, to go into the Ducktown Basin and study the conditions and make a report?

A. Yes, sir, as he explained to me that first of all he was told by the copper companies that were creating no nuisance,

1083 and on the other hand there was a large number of local suits being prosecuted and asked me to go and get him the exact facts on the whole subject.

Q. 12. For how — prior to the trip in furtherance of the commission undertaken under the direction of Governor Brown had you been acquainted with the Ducktown section?

A. Since 1903.

Q. 13. Had you spent any time up there before the commission of Governor Brown, taking observations of this country.

A. Yes, sir.

Q. 14. Give us, in a general way, the extent of your observations, over what period and how often?

A. I had been going there once or twice a month and there was a Mr. Chalmers at that time President of the Tennessee Copper Company, who frequently showed me all through and explained very kindly every part of the process to me, that was during the days of the roast heaps.

Q. 15. State whether or not at the time you were commissioned by Governor Brown to go up there you received also a commission from the then attorney general of the State of Georgia?

A. Yes, sir, the Hon. Mr. Hall.

Q. 16. Are you the same W. M. Bowron, who made an affidavit in the case which is now before the Supreme Court of the United States and in which you are now testifying?

A. I am, yes, sir.

Q. 17. You made that last February, or about that time?

A. Yes, sir.

Q. 18. State whether or not you filed at that time as Exhibit to that affidavit the original commission which you received from Governor Brown, and the Attorney General Hall, representing the State of Georgia when you went to the Ducktown Basin in 1910?

A. I did.

1084 Q. 19. State of you made a written report to Governor Brown, embodying the results of your investigation?

A. I did.

Q. 20. Is that report, or a copy of it exhibited to your affidavit, on file in this case, and in which you made last winter?

A. Yes, sir.

Q. 21. Did you have any other object in going up to this section at the solicitation of Governor Brown and General Hall, except to ascertain and truthfully report the conditions as you found them?

A. Absolutely none.

Q. 22. Does that report which is exhibited to your affidavit in this case honestly set forth the facts as you discovered them?

A. Yes, sir, it does.

Q. 23. On the occasion of this trip, did you inspect or were you shown through, and did you study in detail the construction of the acid plants of the two companies?

A. I did, I may say, however, that at that time the Tennessee Copper Company's plant was largely under construction. There was only one unit that was really in operation.

Q. 24. You mean the acid plant?

A. Yes, the acid plant. There was a large portion under construction.

Q. 25. How many units were there in all to complete the plant, according to the original design, how many units did it comprise?

A. Each unit was supposed to take care of one hundred tons of sulphur a day, and I think units was contemplated. I drew the attention of the manager to the fact that he would not take care of the sulphur fumes which were being emitted, and I asked if they were going on and complete the portion to take care of all
1085 the sulphur fumes. He said that was beyond his province, that he would have to let the Directors in New York settle that.

Q. 26. State if the volume of fumes that was being generated at that time is shown in your report?

A. Yes sir.

Q. 27. In what condition did you find the acid plants of the two companies at that time, commence with the Tennessee Copper Company and just tell relatively what the condition of that plant was, and to what extent it was taking care of the sulphur dioxide that was generated and then that of the Ducktown Company?

A. Without giving the absolute figures which were included in my report there was possibly between a quarter and one third of the sulphur that was generated was being taken care of in the plant, the balance was being sent into the air at Copperhill. In the other case at Isabella, with two furnaces, only one was in operation and the acid plant was able to take care of all that was emitted when I went there, that without any announcement of my visit and object of my visit, and without any knowledge of my presence in the district. I first looked at the top of the stacks and found that there was no smoke, that they were absolutely clear of smoke, and the gas plant was taking care of all of it.

Q. 28. What was the working condition of the two plants as compared with each other, as to whether they were good, bad or indifferent?

A. The Tennessee Copper Company's, it was working fairly well, and in normal condition at the time of my visit. With the other plant at Isabella, it was working just absolutely perfectly. Mr. Hatch, the architect of the plant was in charge of it and showed me over it. It was in perfect working condition.

1086 Q. 29. You are familiar with the character of operations that were conducted at both plants at that time?

A. Oh, yes, yes.

Q. 30. Have you or not visited that section frequently since that time?

A. Yes sir.

Q. 31. Probably how many times have you visited that section during the last two years Mr. Bowron?

A. I do not remember exactly without going over my reference book, I would say five or six times.

Q. 32. Have you been there during the growing season and also during the off season, when vegetation was not growing?

A. Yes sir.

Q. 33. Did you ever have any other connection with the State of Georgia except when you were commissioned to go up there and report on conditions?

A. No sir.

Q. 34. Now, after your report was made to Governor Brown, and was filed and became a part of the State archives, I will get you to state whether or not the Ducktown Copper Company, after obtaining a copy of your report, called on you to go into the basin at subsequent times and report as to the conditions?

A. Yes sir.

Q. 35. And on all of those subsequent visits did you endeavor to ascertain whether any of the fumes emitted by the Ducktown Copper Company and generated by it, were sent into the State of Georgia to the extent that material damage was being done south of the Georgia line, and if so, tell what you did?

A. I went there and took with me a chemical apparatus and applied chemical tests, which would show up to one-forty-thousandth part of one per cent, I tested along until I kept going further and further away from the Isabella plant, until there was no
1087 sulphur at all from Isabella. On this map in red, which you have on the table.

Q. 36. Did you have with you a Government Map, issued by the United — Government, known as the Ducktown Special of the United States Geological Survey?

A. Yes, sir, as a part of my answer, I would say that on subsequent visits, with varying conditions of wind I tested down with this way with the northwest wind how far the Isabella smoke would reach toward the State of Georgia and found it stopped about a quarter of a mile north of Copperhill. There is a high range of hills behind Copperhill that operated to stop it.

Q. 37. Did anyone accompany you at the time you made the observations with the chemical apparatus which you have just referred to?

A. On the two occasions shown in yellow and red, the measurements were taken, Mr. Sherman Reese, was along with me and on the one that is up toward Stansberry Gap Mr. Center of Ducktown accompanied me.

Q. 38. Are you familiar with the section of country, have you a personal acquaintance with it yourself, Mr. Bowron?

A. Yes sir.

Q. 39. I show you a map issued by the United States Geological Survey on which is shown the vicinity of Copperhill and the territory for some miles adjacent in all directions. I will ask you whether or not the tracings on that map in red and yellow, and in dotted lines with ink are made by yourself?

A. Yes sir.

Q. 40. I offer that map in evidence as Defendant's Exhibit No. 1 to this witness' deposition. Now, Mr. Bowron, take that map and tell us what the tracings thereon in red represent?

A. They represent a determination of the exact boundaries at which no smoke was detected by the chemical tests.

1088 Q. 41. State whether or not that route was the route shown in the red tracings, was followed by you on May 27th and 28th, 1912?

A. Yes sir.

Q. 42. You say you had with you an apparatus at that time for testing as to the distribution of sulphur fumes from the Ducktown plant at Isabella?

A. To catch them from wherever they came from. Do you wish me to describe it?

Q. 43. Yes.

A. First of all I got some solutions and prepared them with distilled water and chemically pure chemicals, and took a half gallon fruit jar and moistened it on the inside with a solution of hydrate of sodium, and exposed that four minutes to the air, allowing it to fill with the air with acid fumes. The acid fumes would have at once been taken up by the sodium hydrate. After being so held to catch whatever fumes there were, then bromine was used to concentrate and oxidize whatever acid there was in the hydrate of sodium. After that a little diluted hydrate,—hydro-chloric acid was added to the sulphide and then a chloride solution was used, which had the effect of drawing down at once a white percipitate in case any sulphuric acid was present. The test was entirely negative at certain distances from the plant, as shown by the red lines, there was no intimation of any gas.

Q. 44. At what intervals were these tests made in this way, as indicated by these red lines?

A. At irregular intervals, because I found you hardly ever get anything down in the extreme hollows, but they were made about a quarter of a mile apart.

Q. 45. State when the wind is blowing, whether or not there is a disposition of the fumes generated at one of these smelting plants to drift with the atmospheric currents?

1089 A. Undoubtedly.

Q. 46. In making these tests, how did you manage to ascertain definitely, and by your situation, whether any fumes were being eliminated beyond the confines of the red lines, having regard to the atmospheric currents?

A. The atmospheric currents carry the smoke, and we went to where there was any evidence of any character of smoke and we would stop as indicated by the red lines.

Q. 47. State what those red lines indicated on your map, at that time?

A. Absolutely no gas impregnation of the air.

Q. 48. Was it possible for sulphur fumes, or any fumes generated by the plant at Isabella to be destructive or harmful to vegetation beyond the territory indicated by these red lines on the map?

A. I could not see how they could have been destructive, because there was no gas.

Q. 49. What do the yellow lines indicate on the map that you have filed?

A. At the time the red lines were made, the wind was somewhat from the southeast, and with the altered conditions of the northwest wind it would blow the smoke towards Georgia. It became expedient to ascertain the exact distance the gases went into that territory

under the new conditions, so I made tests with extreme care, following out the yellow lines, and finally they came out about the Davis Mill Creek, as shown on the map; beyond that I did not go, it being a very hilly country. I reached the point marked here 1,700 feet, I went along on top of that mountain without making tests.

Q. 50. In your opinion, was it possible for the fumes from this plant, if they had been escaping, to have travelled to Georgia
1090 and injured or destroyed vegetation without any sign at and along the route described by these red lines?

A. That would be practically an impossibility.

Q. 51. It is maintained, as I understand, by the State of Georgia, in this controversy that when the winds are from the northwest, that the fumes that are emitted by the Ducktown plant drift down into what is called the Flat Creek section, or the Hothouse section of Georgia and injure the vegetation and crops. Now, if such be the case would or not, speaking from your experience and observation, and of the facts there as observed, and likewise your knowledge acquired elsewhere, would or not the effect of those fumes be manifest along that range of hills which you say intervene between Isabella and the State of Georgia as you travel southeastwardly from Isabella?

A. The question is largely hypothetical. I do not know the Flat Creek country, but I have been on Hothouse Creek and no more luxuriant vegetation I have never seen in the mountain districts than that was, and at this place a high mountain intervenes between that and the copper plants.

Q. 52. Hothouse Creek appears to be in the State of Georgia, and to the southeast of Ducktown?

A. It is southeast.

Q. 53. You say you have been down beyond the Hothouse section?

A. Yes.

Q. 54. Have you or not been through that section extensively in the last three or four years?

A. Yes.

Q. 55. Now, what conditions did you find there as regards the crops and forestry?

A. I know when a tree is in perfect good health, but whenever it gets to be unwell, I do not know what is wrong with it. But the crops were looking well, and unusually well as compared with the balance of the country.

Q. 56. What did you note with reference to the color of
1091 the foliage and what appeared to be the condition of the forest?

A. The forest in young growth was light green, its normal color and the ordinary crops were dark green, that was indications of absolutely normal health.

Q. 57. About when were you last through there Mr. Bowron?

A. I have not got it marked down here, but some time this year.

Q. 58. Can you tell me the difference in altitude between the tops of the two stacks, the one at the Tennessee Copper Company's plant,

at Copperhill, and the other at Isabella, being the plant operated by the Ducktown Copper Company, and if so what is it?

A. The top of the Copperhill stack is about 1,885 feet, the stack itself being 325 feet high upon a base, which is some little distance above the river, 1,620 feet to the base of the stack. The stack at Isabella is about 1,670 feet,—No, 1,680 feet, and the top of the water tank which is the highest point is 1,690 feet.

Q. 59. Are those elevations that you have given, those extreme elevations above sea level?

A. Yes sir.

Q. 60. What is the difference in height?

A. The Copperhill stack is 195 feet higher than the top of the stack at Isabella.

Q. 61. State whether or not the heights of these stacks increases the velocity with which the fumes are emitted from the tops of these stacks when the plants are in operation.

A. Yes sir.

Q. 62. What have you to say as to the temperature at which the fumes would be emitted from the tops of these two stacks, which would be the hottest when let into the air?

A. The Copperhill would be the hottest, because it is of fire brick, and has no opportunity to cool from the time it leaves the
1092 furnace as against a stack made of sheet steel, which is a thin metal and which has a cooling effect of the atmosphere all the way up.

Q. 63. The one at Isabella is made of sheet iron or sheet steel, and the one thing in itself would help to cool the smoke as it comes out?

A. Yes sir, and being seven feet in diameter, and sixty feet high at Isabella.

Q. 64. What is the probable diameter of the 325 ft. stack at Copperhill?

A. Twenty feet.

Q. 65. You say it is lined with fire brick?

A. Built completely of brick.

Q. 66. Does that stack hold the heat until the fumes are expelled from the top?

A. Yes sir.

Q. 67. State whether these two stacks, substantially as they are, have been in constant operation since 1906 when the Tennessee Copper Company's plant was blown in?

A. Continually with the exception of short stops for repairs.

Q. 68. Now, state from your knowledge whether or not there is a chain of hills that intervene between the smelting plants of these two companies?

A. Yes sir.

Q. 69. What is the relative height of those hills as compared with the stack of the Ducktown Copper Company, I mean the top of the stack?

A. It is about 1,700 feet above sea level, in the highest point of the ranges between Isabella and Copperhill and the top of the stack

is 1,885 feet approximately at Copperhill, so that makes it 185 feet higher than the ridges.

Q. 70. Are the sea level elevations shown with substantial
1093 accuracy on the map, a copy of which you have filed as an Exhibit to your testimony?

A. They are. They are close, inasmuch as that was the secondary, taken from the old original sheet which was rather crude with regard to elevations but there was subsequent triangulation, and with that all these levels run and corrected, I know some of the parties that were conducting that survey and these were all put in as the Ducktown Special Sheet, and I may assume that they are fairly accurate.

Q. 71. A short distance from Isabella, I see shown on this Government map, and just westward from that red line, the prevailing hills start from Isabella to Copperhill on the intervening mountains or hills there is 1,743 feet high, does that agree with your elevation at that point?

A. Pardon me, I did not catch the point that your question refers to.

Q. 72. I direct your attention to the map, and will ask you if the height shown in this map corresponds with your idea of the hill that intervenes between the two plants.

A. Yes sir, I remember the hills there; it is one just west of the old road.

Q. 73. Now, travelling almost eastwardly from there I notice the elevation is given between the red line and the yellow lines on your tracing is 1.743 feet?

A. Yes sir.

Q. 74. Is that in keeping with your recollection of the range of hills, as to the height?

A. Yes sir.

Q. 75. Leaving Isabella and traveling southwardly along the line of your yellow tracing, I note the figures 1,789, a distance of prob-
ably a mile away from Isabella, what does that represent or
1094 indicate on this Government map?

A. It represents one of the high points on the range following the regular road, the Morgantown road, or beyond the Morgantown road.

Q. 76. Traveling still further easterwardly along that route, I see the figures 1800, what do those figures represent?

A. One of the outlaying ranges of the Appalachian Ranges.

Q. 77. Then, do I understand or not, that the intervening chain of hills surrounding Isabella is from 1783 to 1800 feet above sea level ?

A. Yes sir.

Q. 78. So, if the fumes from that stack would drift off down into Georgia southwardly they would have to climb these hills and drop down into Georgia?

A. Oh, no, they would drop down further than that, the fumes emitted from the Isabella stack, they would drift down into this branch of Potato Creek, and next they would have to go over some hills about the height you have mentioned or pass through the

low places, possibly 1700 feet, then down in the Davis Mill Creek section.

Q. 79. State, if from your experience and observation fumes take that course, and whether or not it is reasonable or probable that the fumes emitted from the Ducktown stack would travel that route and do substantial damage?

A. According to my observation, they do not get even as far as Copperhill, and consequently do not reach Georgia.

Q. 80. Assuming that any substantial damage has been done south of the Georgia line during the past two or three years, in consequence, and since the Isabella acid plant has been put into operation, I will get you to say which of the companies you attribute it to, and why?

A. I should say the Tennessee Company, from the
1095 & 1096 fact that I have stood on the hills of Blue Ridge, about ten miles in Georgia south of the Tennessee line and seen the smoke come out of the stack and come right down over my head, down into Georgia.

Q. 81. Have you or not taken repeated observations of the operations, as normally conducted at Isabella?

A. Yes sir.

Q. 82. Now, speaking from your knowledge of these operations, your investigations of them, and your observations of the country, say whether or not in your opinion it is reasonably probable that any substantial damage is being done by the operations of the Ducktown Copper Company as normally operated at Isabella since the acid plant has been installed?

A. I would unhesitatingly say that it is practically impossible for the operations at Isabella to affect the State of Georgia in any way.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 1. Where do you live?

A. Chattanooga.

Q. 2. What is your present employment?

A. I am a consulting engineer.

Q. 3. For whom?

A. Myself.

Q. 4. Whose employe have you been in for the last two years?

A. I have started and built a railroad last year, and opened some ore mines, and am still consulting for them?

Q. 5. Have you not been in the employ of the Ducktown Copper Company?

A. No.

Q. 6. You made various trips to the Ducktown Basin at their instance since you made that report for Governor Brown, that you speak of?

1097 A. I have been in there, but I have not been in their direct employment, on their payroll, but as a consulting en-

gineer I take whatever business offers, and as such I have such investigations.

Q. 7. That is what I mean, how many such trips have you made?

A. I do not remember now, five or six.

Q. 8. When did you make the first trip for the company?

A. Well, May 27th and 28th, 1912.

Q. 9. On that trip, what was the extent of your investigations, where did you go to and what did you do?

A. I made the chemical tests that I have described in my former answer to determine as to the extent of the smoke present, taking up the question of damage afterwards.

Q. 10. The next trip, when was that and what did you do?

A. I suggested to the management that it was a very onesided affair taking it when the wind was blowing the smoke away from Georgia direction and they said for me to come back at the time when the wind was from the northwest blowing the smoke that way, blowing it towards the Georgia line, and that trip was made on April 12th, 1913.

Q. 11. When did you make the next trip after that, and what did you do on that trip in the way of investigation?

A. There was then a strong wind blowing from the southeast.

Q. 12. You mean the third trip?

A. Yes sir.

Q. 13. When was that?

A. I have not marked the date down, I think it was November of last year. The object of it was to see the distance that the smoke would go with a high wind, and found that it went about two miles.

Q. 14. Then did you say the wind was blowing that day.

A. It was blowing strongly from the southeast and blowing the smoke two miles away from Isabella, having crossed over a ridge into Bushy Creek, and then drawn over into another branch of Bushy Creek.

1098

Q. 15. In your investigation of that trip, you went northwest from Isabella and Tennessee plant?

A. Yes sir.

Q. 16. When did you make the fourth trip?

A. In the spring, and we went down to the Hothouse and Wolfe Creek Districts.

Q. 17. You mean the spring of this year?

A. Yes sir.

Q. 18. Do you remember the month?

A. I have it on my notes, I have not got it here.

Q. 19. What did you do on that trip?

A. We went around and saw the vegetation was — absolutely luxuriant condition.

Q. 20. Did not you go then as a chemical expert and make demonstrations on that trip?

A. I made no tests at all, there was no object in making tests, there was absolutely no damage shown.

Q. 21. You are not an expert entimologist, are you Doctor?

A. No sir.

Q. 22. When did you make the next trip?

A. I have not been on any special trip since this, with the exception of one in the Jack River Basin, that was in the Spring.

Q. 23. That was what direction from these plants?

A. It is about south and a little west.

Q. 24. Now, on each trip,—On which trip was it you stood on the hill above Blue Ridge and saw the smoke from the Tennessee Copper Company coming over your head?

1099 A. That was the time I came up for Governor Brown.

Q. 25. That was two or three years ago?

A. That was 1910. I did not know whether the Governor's request, being an extra territorial prder, it would be honored by these companies. I wanted to get all the information I could beforehand.

Q. 26. Your investigation was made in 1910?

A. Yes sir.

Q. 27. If the Ducktown Company had been emitting any smoke at that time, which way would the wind have brought it, on that day you stood on the hill?

A. The same direction as the wind was blowing, from the northwest.

Q. 28. And is it not a fact that from the hill that you stood on, it is practically in line with the Tennessee Company?

A. Due northwardly. Just about from where I was standing it was somewhat, I would not say exactly due north.

Q. 29. Well, in a northerly direction?

A. Yes sir.

Q. 30. And would not you have to look directly through the Tennessee plant, and Tennessee smoke, if it was emitting any, to see the Ducktown company's stack?

A. I could not do it, because there is a high range of hills in behind the Ducktown plant, and you would have to go over it to look down.

Q. 31. But if the Ducktown Company was blasting out the volume of smoke in behind there would it not go above the hills?

A. It probably would.

Q. 32. And could you not, standing on the high mountain,—Were you not on a high mountain?

A. No, on a fairly high ridge.

Q. 33. Could you not from that high mountain look right

1100 down and see the smoke?

A. No sir, I could not. I tell you what I did from the highest point right in behind Copperhill stack, that is when — one of the highest ridges, I stood on that and purposely examined very closely to see if I could see the stack of the Isabella plant. You cannot, it is right down in the bottom of the basin.

Q. 34. State whether or not,—State on what hill you were standing?

A. Immediately north of the Tennessee Copper Company's plant.

Q. 35. But, Doctor, that is not my question, Standing on that high mountain down there at Blue Ridge, ten or twelve miles away and looking down, could you not see the smoke coming from the

Ducktown Copper Company's plant while you were standing on that high hill at Blue Ridge?

A. I stood on that hill, and purposely investigated to see if I could see it, but it is in behind all the ridges and you cannot see in a quarter of a mile of it.

Q. 36. But, Dictor, does not the stack of the Ducktown Company come up to about a level with the hills immediately around it?

A. Yes sir, it is some lower, you cannot see it.

Q. 37. At what heat does the copper smelt, Doctor?

A. I do not remember that, I have got a note of it, but I do not remember off hand.

Q. 38. Well, give me as nearly as you can, as an expert, the heat they smelt copper.

A. Well, I will tell you right now, that the heat at which they smelt the copper is not as greater as it is in the reduction.

1101 Q. 39. Would not the smoke be as hot as the furnace when it got out?

A. Just about.

Q. 40. Would not the heat of the smoke have something to do with its going up and raising in the air?

A. Yes sir.

Q. 41. Would not the hotter the smoke is, the higher it would raise in the air?

A. It would undoubtedly. If originally hot, they are carried up on the same theory as a hot air ball-on.

Q. 42. Please tell me as nearly as you can if you cannot give any exact figures, how hot that smoke is when it first starts out of the smelter?

A. Roughly red hot.

Q. 43. Red hot, about how many degrees?

A. I do not remember.

Q. 44. About how many?

A. I cannot guess at it.

Q. 45. 1000?

A. It is undoubtedly over 1000 degrees.

Q. 46. You have been dealing with those acids ever since you were in England many years ago? ?

A. No, not in copper smelting.

Q. 47. Didn't you treat copper smelting and have to do with copper when you were in England?

A. I was with the sulphuric acid plants. I have been iron making since then.

Q. 48. Didn't you have to heat the sulphur to use in this plant the same was as out here?

A. We used practically the same thing they are using at the copper plant for getting the sulphur contents.

Q. 49. And is not, Doctor, the only difference in these two ways, the Ducktown Copper Company's ores have copper in *it* and

1102 the other ores are free from copper?

A. Largely so, although we occasionally use copper ores.

Q. 50. In the smelting of these sulphur ores in England, what kind of process did you use?

A. We do not smelt the ores, we keep them from smelting use the ore at red heat and burn the sulphur out.

Q. 51. You heat them?

A. Yes sir.

Q. 52. And how hot did you get it?

A. Red hot.

Q. 53. How long did you work at this plant?

A. A few years.

Q. 54. How much heat did you use in these plants to get the sulphur into a gas and turn it into sulphuric acid?

A. We purposely kept it red hot, so as not to fuse the slag.

Q. 55. What is red heat?

A. What is red heat. 900 degrees.

Q. 56. About 900 degrees?

A. Yes sir, visible red in day light.

Q. 57. What heat do they have to use to smelt copper in this operation at Ducktown?

A. I have just told you I do not remember.

Q. 58. Didn't you ever work in an ore plant similar to these at Copperhill?

A. No.

Q. 59. Didn't you qualify in your direct examination by stating that you had vast experience?

A. I have worked a good deal out and around, but I am not in the manufacture of Copper, but with regard to the sulphur ores and sulphur I do not know just the heat.

Q. 60. Did you claim to be an expert on sulphur fumes and ores?

A. Yes sir.

1103 Q. 61. Can you tell even approximately how many degrees you have to have it?

A. I do not remember because it was not material. I was going after the results.

Q. 62. It would have a good deal to do with how high these fumes would raise into the air?

A. The only thing, or the only way I can do that, is by the curves they make, the top of the tall stack being unsurmountable.

Q. 63. Is it not a fact that from plain simple observation, to stand there on any of those hills and watch the smoke stacks at Ducktown, can you not see that the smoke is going straight up when the wind is not blowing very hard, for two or three hundred feet?

A. At Copperhill, yes.

Q. 64. And then when it strikes the upper currents of the air, does it not drift off in some certain direction?

A. Whatever way the wind blows, that is the way it goes.

Q. 65. And if the currents of the air from the northwest, would not those currents of air drive this smoke out toward Georgia?

A. It would drift in the direction of Georgia.

Q. 36. And would they not mix and mingle with the smoke, if any were being emitted from the Copperhill plant?

A. No, sir, it would not.

Q. 37. If not, why not?

A. Well, simply because there is a peculiar condition there as applied to the Isabella plant. It is down, as I have described, in a hollow, in between two hills and the air coming up the creek, as soon as it strikes the plant and those hills it makes false currents, drifting upward and carries the smoke upwards and disemminates it in the upper air, but it does not go as a coherent body, like the other does up above these false currents.

1104 Q. 38. But, my question was a hypothetical question and not one based on your personal knowledge. I asked you the question if the smoke and fumes from the Ducktown Copper Company's stack should be heated to 1000 or 1200 degrees heat, and it should rise up through the lower strata of the atmosphere, on account of that heat, two or three hundred feet high, and then the general bearing of the air currents should travel over those little hills in there would be a southeastwardly direction, it would be driven by the winds from the northwest, and at the same time the fumes were being emitted from the Ducktown Copper Company's plant, should be going up into the atmosphere, at that point, would not they mix and mingle with these fumes that were driven from the Tennessee Copper Company at Copperhill and all come into one body and go into the State of Georgia?

A. I could not answer that except by telling you that I have never observed such conditions as would make such a mixture, and I regard such a mixture as impossible.

Q. 39. At Ducktown, what kind of process do they use, Doctor?

A. The ore is put in regular mixture with the flux and is melted in the ordinary copper smelting process, by blast, and comes then to a matte, brought down to a matte and is then shipped.

Q. 40. I mean with respect to the furnace, the blast furnace, do they use a blast furnace there?

A. Yes, sir.

Q. 41. Is that the same process they use at the Tennessee company's plant?

A. I will partly show. The Tennessee Company figures to get ninety-nine per cent out of the ore by refining it. At Isabella they get sixty five to sixty six per cent out, the balance being retained in the slag.

1105 Q. 42. I was askin especially with respect to sulphur fumes.

A. That is what I say.

Q. 43. Is not there a different kind of draft used at the two places?

A. They use blowing engines in the furnaces, and in the one case the top of the stack is closed and the sulphur smoke goes right into the chambers and is turned into sulphuric acid.

Q. 44. Does not the Tennessee plant use this tall stack, Doctor,

to get a stronger draft, while the Ducktown Company uses a smaller stack and more artificial draft?

A. They use artificial draft in both cases.

Q. 45. They use it in both instances?

A. Both get their draft by blowing engines.

Q. 46. They get the draft the same way at both places?

A. Stronger fan draft and that is what they have to use to keep their furnaces going. They use the same sort of draft at both places, approximately the same, the tall stack was put in for draft purposes.

Q. 47. Now, Mr. Bowron, will you please commence at the very beginning and describe in detail, from a scientific standpoint, the method of making sulphuric acid at the Ducktown Copper Company's plant?

A. The sulphur is expelled by heat from the ores, sulphate of iron which is in the copper ore as it is taken from the mines. Then it goes, passing along the flues into the chambers, it mixes then with hypo-nitrates acid *by* originated by putting in nitrate of soda plus sulphuric acid. That mixture gets cooled off finally, and is put in with a mixture of steam into the chambers.

Q. 48. What per cent of sulphur do they take out of these fumes?

1106 A. Practically all.

Q. 49. What do you mean by practically all?

A. They take all they can commercially extract with the exception of a very small percentage which goes into the slag of the furnace and a very small percentage allowed to escape in the method of manufacturing, and in the improved method we have now it is a very slight amount in the emission of smoke, in other words, it is not done with the closeness of the laboratory work.

Q. 50. Then all that blue hazy smoke belching forth from that sixty foot stack is not sulphuric acid fumes or sulphur dioxide?

A. I have not seen it except once, and I could not say that it was belching forth.

Q. 51. Well, then let us say boiling out?

A. That would be only a difference in terms.

Q. 52. Is there any difference in boiling out and belching out?

A. Not the slightest.

Q. 53. Well, coming out.

A. Well, sir the top of that stack is absolutely free from any smoke that has that appearance of containing sulphuric fumes.

Q. 54. Absolutely free you say. Will you please tell us, with all the tests that you have and the experience you have had with the manufacture of sulphuric acid, please tell me what per cent of the sulphur dioxide they are taking care of at that plant?

A. I have not investigated that, but I should say approximately thirty per cent in the matte and as much as they can collect in the sulphuric acid chambers, I should say that from ninety to ninety five per cent of the sulphur generated from the ore is taken care of.

1107 Q. 55. Why do you say there is thirty per cent in the matte?

A. Simply because it is put there. The first operation is not to make copper, it is to make the matte. The matte is usually shipped and goes through a second operation, which concentrates the matte still further into copper.

Q. 56. Don't they run theirs through the second time, through the second process, and sell it as copper matte?

A. Yes, sir.

Q. 57. What per cent copper is it?

A. I have no way of knowing that.

Q. 58. But you are speaking of that as having thirty per cent of sulphur, I will ask you if that is not the first matte?

A. No, from eight to fifteen.

Q. 59. What I mean, the matte they sell, how much sulphur is left in that?

A. I have never seen the analysis of that, but have the figures given me by Mr. Renwick when I was up there.

Q. 60. You do not know?

A. No, sir.

Q. 61 You do not know how much sulphur they turn loose or save in the matte, or waste, but all the sulphur is turned loose that is in the ore?

A. Yes, sir.

Q. 62. You do not know?

A. I do not, there are witnesses who will be able to tell you.

Q. 63. Doctor, what is the most practical way of finding out how much sulphur dioxide they are sending out into the atmosphere?

A. They are making a regular debit and credit system statement as to how sulphur there is in the ore, how much in the sulphuric acid they make, or percentage of sulphur in it, how much there
1108 is in the slag, and then the balance will probably be wasted.

Q. 64. You have never, have you, Doctor, to explain the situation at that plant from that standpoint?

A. I have not.

Q. 65. You do not know a thing in the world about their books or anything like that?

A. I have never been in their office and seen them.

Q. 66. And know how much they are wasting?

A. I never had access to their manufacturing data.

Q. 67. And you do not — how much acid they are making or how much copper they are turning out?

A. No, sir.

Q. 68. And you do not know from that data how much acid they are making and how much is contained in the matte and how much is turned loose?

A. I do not.

Q. 69. What process do they use at Copperhill in mixing their fumes, if you know, or have you examined their process in your examinations up there? enough to know about that, do you know about that?

A. I believe I do. I do not know whether it is regular information though, but they take it by means of fans, and they will make the acid, all the acid that they can sell to the trade without breaking the prices.

Q. 70. Doctor, that is not the answer; I am talking about the Ducktown Copper Company?

A. Oh, I thought you said the Copperhill plant.

Q. 71. At Ducktown, we have agreed to use the term Ducktown Copper Company in speaking of the D. S. C. & I. Company for short in this investigation, and for the other we refer to it as the Tennessee Company.

1109 A. What was your question?

Q. 72. The question was: How do they mix the gases, in the process they use, in the chambers at Ducktown, if you know?

A. Well, just the ordinary process I have described by the use of Hydrate nitrate, mixing that with the sulphuric acid gas, coming from the furnace and the presence of steam in the chamber carrying oxygen and it is fairly mixed in there and in this manner the acid is made.

Q. 73. And they use the same process at the Tennessee Company's plant?

A. Exactly the same.

Q. 74. That is about the same process they use everywhere.

A. The normal process used all over the country.

Q. 75. What, if any, is the difference between the sulphurous fumes issued from this plant and those issued from any other normal sulphuric acid plant?

A. I asked the question when I went up there for Governor Brown, what was the amount of acid at Copperhill, and I was told they had made no analysis and as I have not seen one from the Isabella plant it would be mere guess work.

Q. 76. You cannot answer that?

A. I cannot.

Q. 77. You do not know then the difference from this plant, this sort od plant and an ordinary sulphuric acid plant?

A. I do not. I, do not think there would be much difference.

Q. 78. Coming back, Doctor, the investigation you made there chemically, on your first and second trips, I believe, was it not?

A. Yes sir.

Q. 79. You made one of those investigations north or northwest of the plant, and one southeast from the plant?

A. Yes sir.

1110 Q. 80. When the winds, as you stated were blowing in those directions?

A. Yes, sir.

Q. 81. Is that the map you had?

A. Yes sir.

Q. 82. I believe you stated that point south, coming this way, I believe you were coming towards Georgia?

A. Yes sir.

Q. 83. How did you get from the Isabella plant here?

A. Right along the yellow line, here it is.

Q. 84. How far is that point on the yellow line where you found evidences of sulphur fumes from the Isabella plant?

A. We did not find it any further than this mark, but I went up there to make sure that there was not any on top of the mountain.

Q. 85. It was over two miles?

A. No, it is about a half mile to a mile or about that. It is two inches to the mile. It is as far south as we went. (Witness measures the distance on the map).

Q. 86. You found none further than a half mile toward the Georgia line?

A. No sir, it run out then.

Q. 87. Would you not call that investigation purely local?

A. Yes sir.

Q. 88. Would you not rather attribute the evidence of sulphuric smoke you got along there, would you not rather attribute that to the gases that escaped from around the furnace?

A. Into the air?

Q. 89. Rather than those which might be emitted from the top of the stack?

A. Practically all the same, it is all in one basin, whether it comes from the stack itself or the furnace, it is all local, it has to

1111 get out of the basin.

Q. 90. Is it not true, that quite a quantity of gases and fumes of sulphur are emitted from around the furnaces and around the acid chambers that leak out?

A. The acid chambers do not leak.

Q. 91. Well, that come from the furnaces and when you are down around the plant cannot you smell it strong?

A. Yes, but relatively there is already any leakage at all, relative to the gases generated you will find that there is an exceedingly small leakage, if there is you can tell it right around the house.

Q. 92. These fumes that escape from around the furnace would be driven by the air right along these low ridges, and you would smell that if you found gases along the big road?

A. Yes sir, they will, they will all be confined in the basin until a rain comes along and they are washed down into the ground.

Q. 93. Would they stay there until the rain comes?

A. They usually do. They are so much heavier than the air that they settle down right around the ground.

Q. 94. Do they exist in the form of sulphuric dioxide?

A. No, more of sulphuric acid.

Q. 95. When it rains it is washed off of the vegetation and trees?

A. If there were any trees around there, it would undoubtedly injure them in the extremely restricted basin that the fumes occupy, but they would come off.

Q. 96. There are no trees at all on those ridges where you made these chemical tests?

A. No, there are no trees or anything except a close bunch grass, and all growing shrubs,——

1112 Q. 97. And everything of that nature has been killed?

A. Yes, sir, it is killed in the days of the old roast heaps, but is coming back, there is one of the prettiest peach orchards you ever saw there.

Q. 98. And is it not a fact that peaches will live better than anything else in that country?

A. I don't know.

Q. 99. Didn't you observe that?

A. I know there are good peaches up there.

Q. 100. Don't you know that there are good peach orchards that were put out five or six years before the acid plants were installed?

A. No, I do not know. I was through there in 1903 and could not see any from the plants. The smoke was so thick.

Q. 101. That was local?

A. Yes, sir, local.

Q. 102. Would not building that stack up sixty feet high, and it being on an elevation of nearly 1700 feet, would not the smoke coming out at the top of the stack at the heat it takes to smelt the copper, you do not know how much that is, rising up there two or three hundred feet in the air, would not the effects of that smoke be carried out further into the air which ever way the wind was blowing than it would locally?

A. If the base of the stack was 1700 feet and it went up two or three hundred feet in the air it would have more distribution; but the base of the stack is about 1600 feet and the smoke where it goes out, does not go higher than twelve or fifteen feet above the stack.

Q. 103. Did you not state in your original examination that it was 1600 feet?

A. No, 1650 feet, to the top of the stack is 1680.

1113 Q. 104. Did you not give the top of the stack as 1690 feet?

A. 1690, I made a mistake if I did.

Q. 105. Now, with that stack at an elevation of 1680 feet, and those fumes rising two or three hundred feet in the air?

A. But they do not.

Q. 106. You say that is impossible for these fumes to not go more than a few feet high?

A. I have watched them on different occasions.

Q. 107. More than how many feet?

A. I should say not more than ten to twenty feet high.

Q. 108. Under any conditions of the atmosphere?

A. Under any conditions.

Q. 109. Doctor, as an expert chemist, what do you say the atmospheric conditions have to do with sulphuric acid fumes?

A. I will tell you in a second (referring to memorandum book) I will give you what it is in a moment, if you will let me find the place. The question is one that is of actual relative ratio, the diffusion at high temperatures vary, they are retarded. For instance, if air is one, in the dif-usion, if air is 1 sulphuric acid is .68 at ordinary temperature, but if it is made at higher temperatures the dif-usion very rapidly decreases. In other words, if the sulphuric acid is at a very high degree in coming out, the dif-usion is a great deal less

than at ordinary temperature. So, you see that is not a question that yes or no could answer.

Q. 110. As I understand, if these fumes are very hot they will cohere or hold together?

A. They will hold together.

Q. 111. And the colder they are the easier they will dif-use and scatter and vanish?

A. Surely.

Q. 112. And as these come out then at a very high tem-
1114 perature out of the top of the stack on a very hot day, they would rise higher and hold together longer than they would on a very cold damp day, would they not?

A. No, sir, in cold days the atmosphere is denser.

Q. 113. If not, why not?

A. I say the atmosphere is much denser on cold days in cold weather than hot.

Q. 114. Hot will hold these fumes together and cold will dif-use them, please explain why they would not hold together longer on a hot day than they will on a cold day?

A. They might hold together, but they would not ascend so high.

Q. 115. What is the weight of sulphuric acid gases, or sulphur dioxide?

A. Air weighs 1.29 ounces per cubit and sulphuric acid weighs 2.88.

Q. 116. Which is the heavier?

A. Sulphuric acid is about twice the weight of air.

Q. 117. But for the fact that it is heated it would not rise into the air at all?

A. No sir, it would fall right down to the ground if it was not heated.

Q. 118. I understand you to say you cannot give me the heat at which they smelt copper ores, at Copperhill?

A. I expect it is heated at both places to about the same degree.

Q. 119. What is it at any other copper plant?

A. I told you I did not know unless I referred to my notes.

Q. 120. You cannot even approximate it?

A. No, I could not.

Q. —. Would it be more than 1000 degrees?

A. No, I do not know.

1115 Q. 121. Doctor, do you know anything about the dif-usion of gases?

A. Some.

Q. 122. Please explain relative to a ton of sulphur gases being expelled into the air, how would it dif-use, and at what ratio?

A. I do not know about a ton, we do not measure it in that way.

Q. 123. Take such a quantity as you may wish and tell us.

A At normal ordinary heat the dif-usion would be 6/10 of one per cent.

Q. 124. What?

A. It would be six-tenth of one per cent, in other words, while

air would be blowing through water and at the rate of one, sulphuric acid would be going at the rate of six-tenths.

Q. 125. Could you not tell me then, how much, if that gas was expelled from the plant at a certain heat, say six tons of sulphur dioxide per day, at what ratio would that be dissolved?

A. I should have to know the temperature.

Q. 126. Well, let us say at 1700 degrees, let us assume that the gas comes out of the stack and the copper is smelted at 1700 degrees.

A. That takes a little bit of calculation, I could not tell you off hand.

Q. 127. Please calculate and see what ratio to the air that would be?

A. I can tell you after dinner, I cannot tell you off hand, because some bit of a calculation, and it may involve references to a table of cube roots.

Q. 128. To speak in plain English, would it not be much smaller than at a low temperature?

A. Yes.

1116 Q. 129. Now, Doctor, has not most of the figures you have given in your testimony been from notes and books that you have in your hands at this time?

A. Well, no.

Q. 130. And not from your knowledge independent of the data you now hold in your hands and in your lap?

A. I have not quoted anything unless it is put in there as a quotation with the author given, to my knowledge.

Q. 131. What is the specific gravity of sulphur dioxide?

A. I will look at this again.

Q. 132. Do you have to look at notes to answer that question?

A. I look at notes for everything. I do not trust my memory any more. (Referring to note book) 2.247.

Q. 133. If the fusing point of copper is 1700 degrees how many times would sulphur dioxide be expanded?

A. I cannot answer such a question as that off hand, they are all questions of calculation.

Q. 134. Can you tell at what degree of heat it expands?

A. It expands at all times, commences to expand at each degree.

Q. 135. Can you tell at what degree of heat sulphur dioxide will expand?

A. At every additional degree—it will expand all the time.

Q. 136. At what ratio does it expand?

A. I cannot answer that, off hand. I have not memorized these tables.

Q. 137. I am asking you if it does not expand only .270 to every degree?

A. I say I cannot tell you, I rely entirely on my notes, not on my memory for figures.

Q. 138. Then your conclusions from your local investigations up there, and what you know as an expert from many years working in acid plants is that this plant is taking care of all its fumes?

A. Practically it is taking care of all its fumes.

Q. 139. That is what I mean, practically.

1117 A. These small escapes of gas are negligible quantities.

Q. 140. By that, you mean by practically, you mean they are negligible?

A. Negligible, absolutely.

Q. 141. They are not worth taking care of or noticeable?

A. They are worth taking care of, but they do no damage.

Q. 142. I am speaking from a commercial standpoint, you say they are negligible, are they worthless?

A. I said they are worth taking care of, and will be worth it if they could be retained.

Q. 143. Doctor, do you know enough about the injurious effects of sulphur dioxide on growing vegetation, to know about what per cent in the air would be injurious to trees?

A. I do not know. I simply know it by notes of other people. I have done a great deal of microscopical work, at times on leaf injury and things of that kind, but I do not know the percentages, it is quoted as being some alarmingly small percentage.

Q. 144. Don't you know that one part of sulphur dioxide to one hundred thousand parts of air will kill growing vegetation?

A. I do not know that as a fact. I assume it is correct, because I have seen it published and I have found,—but I have not found any damage to vegetation and I have not had to go into that.

Q. 145. Didn't you embody that in your report to the Governor of Georgia?

A. The copy only, as a quotation.

Q. 146. Only as a quotation?

A. Yes, sir.

Q. 147. And did you not state also in that report, and is it not a fact that one part of sulphur dioxide to one million of

1118 air is exposed any length of time to growing vegetation would be very injurious?

A. It would have an injurious effect of course.

Q. 148. And you know that the movement of winds and the direction of winds have a great deal to do with the radius of the damage done?

A. Undoubtedly.

Q. 149. I do not understand you.

A. Undoubtedly.

Q. 150. And would not the contour of the country and shape of the hills and mountains have much to do with it?

A. Yes sir.

Q. 151. And assuming that there was valley, and a break in the mountains leading southeast into Georgia, and assuming that the prevailing winds in the growing season are from the northwest into the southeast, would not that have a tendency to collect these fumes into one volume and drift them over into that valley between those mountains and with the winds?

A. Yes sir.

Redirect examintion.

By W. B. MILLER, Esq.:

Q. 1. Mr. Bowron, you know that high chain of hills which is raised between Isabella plant and the Georgia line?

A. Yes sir.

Q. 2. And there is no use to assume otherwise, when you know as a matter of fact that they are located there as on the Government map?

A. No sir.

Q. 3. That is right?

A. The question I was just asked by the gentleman required speculating. The tendency would be to drift it down Brushy Creek, then into the Ocoee which carries it into Tennessee and then into Georgia.

Q. 4. He asked you to assume that there is a valley where
1119 there is not one?

A. It is all full of assumption.

Q. 5. You knew the country before the plant was built and put into operation?

A. Yes sir.

Q. 6. What is the difference since the plants have been placed in operation in that territory, south, southeast and southwest from Copperhill?

A. There is all the change in the world, because in the old days of the open roast heaps the sulphur eliminated from the plants at Copperhill and Ducktown, for all that district was a big nuisance that corroded everything that it touched.

Q. 7. Since the acid plants have been put in operation how is it?

A. There is an improvement from year to year, as the acid plants are being finished one unit after another and being put into operation, they are taking care of more acid every year. Their smoke that is coming out from the chambers and going out from the tall stack across the hills grows less and less and at Isabella, the gas that comes away from there is negligible absolutely.

Q. 8. Now, the top of that tower on the acid plant as I understand, at Isabella, is taller than the top of the smelter stack?

A. Yes sir, the tower is.

Q. 8. What would have to be the condition of the atmosphere if the fumes were to belch up as it is expressed by the other attorney, or boil up, to a distance of two or three hundred feet, can you conceive of an atmospheric condition when the fumes would do that?

A. I have been in all parts of the world and have never saw the atmospheric conditions that would permit it.

Q. 10. When would these fumes rise to the greater height,
1120 when the wind is blowing or in still weather?

A. I cannot conceive of the fumes rising, and at the same time drifting to Georgia. Now, in answer to that there might be some at the furnaces, but the relative small quantity emitted at the Isabella company would not allow it to go to any great height. The cooling of the stack and the atmospheric condition, and it being

heavier than the atmosphere, it would naturally spread and precipitate at a very short distance. With the plant, the stack being twenty feet in diameter, a great big heat container, it would go to a great height, and would be in a condition to be driven away off down into the direction the wind was blowing.

Q. 11. Now, about the height that the fumes are sent by the operations at Ducktown, whether the winds are blowing or not, I mean at the Isabella plant.

A. It matters very little because the winds blow over the top of the hills and there are local conditions in the little valleys intervening to take care of the smoke. For instance, I saw brush smoke, where they were burning brush heaps, the wind was blowing northwestward, but the smoke from the heaps went eastward.

Q. 12. So, the fumes from the furnace wherever they were raised from, at Isabella, would be broken up, when they struck the chain of hills running down through there?

A. Absolutely broken up and settle into the basin.

Q. 13. State whether or not if you timed your visits for making your observations with the chemical apparatus, and the route of which are defined on your map, so as to go there and take these observations when the Tennessee Copper Company was closed down?

A. Yes sir.

Q. 14. That was when they were temporarily shut down for repairs?

1121 A. Yes sir.

Re-cross examination.

By J. A. DRAKE, Esq.:

Q. 15. Did you make an analysis of their ores up there at Isabella?

A. No sir.

Q. 16. Or Ducktown?

A. I took that analysis as given by them.

Q. 17. You were sworn in the case of Shippen Brothers Company against the Ducktown Copper Company?

A. I was.

Q. 18. I will ask you if in that deposition, if you did not state the per cent of sulphur in the Ducktown ores?

A. I might have given it, if I gave it to you, I took it from their own figures and not from mine.

Q. 19. I will ask you to refresh your memory, I will allow you to look at the deposition in that case and see if you did not testify to this:

"Q. Tell me how much sulphur there would be in that.

A. Twenty-nine per cent. Q. "

Q. 20. Did you make that statement there, Doctor?

A. I expect I did. If it is not a misprint, I think however, that it probable is 2.9 per cent, I remember the stenographer in the case saying that they had no way of showing the percentages of that sort and things on the typewriter.

Q. 21. And your statements in the report to the Governor of Georgia, which is on file in the Supreme Court of the United States is correct as taken from the figures given you?

A. By the officials in charge of the plant, I made no examination myself.

1122 Q. 22. Now, the first trip for the Governor in investigating the plant, what condition did you find the sulphur plant in?

A. Which plant?

Q. 23. The Ducktown or Isabella plant?

A. It was in operation. Everything was working perfectly well. Mr. Hatch, the architect of the sulphur plant was in charge himself, and it was working the very best it possibly could. There was absolutely no smoke there at the time and everything was entirely all right.

Q. 24. Since then, have they built any more acid plants at that place?

A. There is a portion of it incomplete, and with a Supreme Court verdict hanging over them, I do not think that they felt inclined to complete it.

Q. 25. Have they not done anything more toward putting in any more of these acid consumers, which takes care of nitre?

A. They have put in — or more towers for getting the nitre back to the plant, and also save the concentration.

Q. 26. And that is the only improvements they have made?

A. No, the improvement was without doing that. They shut down one of the two furnaces and are only generating enough sulphuric acid to be taken care of by the plant existing there now.

Q. 27. Are they just running one furnace?

A. Yes sir.

Q. 28. They have two furnaces?

A. They have two, they keep one in reserve.

Q. 29. Don't you know, as a matter of fact that they run two a lot of the time.

A. Yes sir, I have seen them.

Q. 30. When they run two, don't you know that they cannot take care of the fumes, or even pretend to?

1123 A. I do not know what would be the effect, but I know they largely take — of them, I have only seen them running the two furnaces on one or two occasions.

Q. 31. Don't you know they cannot take care of all of the fumes in that one acid plant?

A. Yes, but the Tennessee plant have seven and the Ducktown have only two.

Q. 32. Don't you know that under an agreement with the State of Georgia the Tennessee company does not run but two of those furnaces?

A. I have never read the agreement.

Q. 33. Please tell me the acid chamber space of cubic feet of the Ducktown Company?

A. I have not got the figures.

Q. 34. What is the cubic feet space of the Tennessee company?

A. I have not got the figures.

Q. 35. Just speaking in a common sense way, and roughly, what is the difference in size of these two plants?

A. The Tennessee acid plant is infinitely large*ly* than the Ducktown plant?

Q. 36. Would you not express it in figures, how many times larger, say four or five or six?

A. I don't know.

Q. 37. Did you ever test the smoke and fumes and gases coming out of the top of the Ducktown stack?

A. No sir.

Q. 38. You do not know what the per cent of sulphur is in those fumes?

A. I don't, they are very small.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 1. Mr. Brown, you say the Tennessee Company have
1124 several furnaces, do you know how many they have?

A. Seven.

Q. 2. Do you know any reason why — the State of Georgia wants to stop any damage done in that territory, why it would let the large Tennessee Company alone and jump on this little company?

Mr. DRAKE: I except to that question as being irrelevant, incompetent, impertinent, and as a conclusion.

Exception overruled and appeal taken.

A. I do not know the methods of the State of Georgia.

Further deponent saith not.

Sworn to before me this 20th day of June, 1914.

_____,
Clerk and Master.

(The noon hour having arrived, an adjournment was taken in the taking of these depositions until 1:30 o'clock P. M. of this date.)

(Pursuant to adjournment the further taking of depositions in this cause was resumed at 1:30 P. M. at the same place and in the presence of the same parties on this the 20th day of June, 1914.)

1125 W. F. LAMOREAUX, the next witness, having been duly sworn, deposed as follows:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. What relation do you sustain to the Ducktown Sulphur, Copper & Iron Company, called in this record the Ducktown Copper Company?

A. I am Assistant to the General Manager.

Q. 2. How long have you been connected with the company?

A. Since April 1905.

Q. 3. You were there then prior to the building of the acid plant?

A. Yes sir.

Q. 4. What is the difference in altitude of the tops of the stacks that have been operated by the Tennessee Company at *at* Copperhill and the Ducktown Company at Isabella, at the present time, and for some years past?

A. It is between 190 and 195 feet difference in elevation of the tops of the respective stacks.

Q. 5. I understand the top of the stack of the Tennessee Company is approximately 195 feet higher than the top of the stack of the Ducktown Company?

A. Yes sir.

Q. 6. Has that been so for some years past?

A. It has been so since approximately 1906, at the completion of the Tennessee Company's high stack.

Q. 7. State when the acid plant of the Ducktown Company was built and also when it was *out* into operation?

A. The ground was broken for the erection of that plant on the 8th day of July, 1908. The plant was completed and put into operation on the 11th day of June in the succeeding year, 1909.

1126 Q. 8. Before that acid plant was built, was there or not an experimental acid plant built by your company, near its present plant?

A. There was a ten-ton Castlycac plant built to experiment with for some thing over a year.

Q. 9. Before the building of the present one was commenced?

A. Yes sir.

Q. 10. What was the primary object of building that first one, to experiment with it?

A. Experiments had been conducted for years preceding with the hope of recovering the sulphur in the air, and we consulted with various authorities and architects on the subject of finding the most feasible ways and the experiments were finally abandoned in favor of the Chamber Process. The present plant is what is known as the Chamber Process Sulphuric acid plant.

Q. 11. Do you know approximately what was spent in experiments by the Ducktown Copper Company, in an effort to recover the sulphur dioxide?

A. Thousands of dollars in a number of years was spent in experimental work, previous to the building of the contract plant, and that plant cost in the neighborhood of forty thousand dollars and several thousand dollars more was expended in remodeling and working with that plant previous to the building of the chamber plant.

Q. 12. The Ducktown Company finally resolved the question as to the character of plant to be erected in favor of the chamber plant? plant?

A. Yes sir, that is correct.

Q. 13. Approximately what is the cost of the sulphuric acid plant, that you now term the chamber plant, of the present plant, and to build and keep it in operation?

1127 A. The cost up to the time the plant was put into operation, or up to the end of 1909 was approximately $600,000.00.

Q. 14. That does not include the repairs and upkeep since that time?

A. No sir.

Q. 15. Now, state when the acid plant was put into operation?

A. On June 11th, 1909.

Q. 16. Has it been operated continuously since?

A. It has been operated with the exceptions of a few occasions when repairs were made to the furnace, at which time the acid plant was not in operation.

Q. 18. I will get you to state whether or not the plant has been built and that investment made by the company in an effort to conform to the rulings of the Supreme Court requiring the company to build and equip, or at least giving it time to build and equip such a plant?

A. Yes sir.

Mr. DRAKE: We except to the question because it is leading.

Exception overruled and appeal taken.

Q. 19. Just state how that was?

A. As I stated previously, a great many years have been spent and a number of thousand of dollars with the idea of utilizing the sulphuric gases in the air, aside from the question of the sulphur smoke menace. At the time the threatened injunction was held over the company they made very strenuous efforts to discover and utilize the best scientifical knowledge with the idea of entirely eliminating the smoke nuisance, and that plant, the present plant was built more with that view than with the commercial view. In fact, at that time, it was doubtful whether it would be of any commercial value to the plant. After consultation with engi-

1128 neers and visits to other plants throughout the country, we were led to believe that there would be no income from the sulphuric acid plant.

Q. 20. I will get you to state whether you mean that would be, that there would be no profit?

A. That there would be not net profit, it would result in no dividend, or income to the plant, to the company, I should say.

Q. 21. State if you know whether the most scientific knowledge and attainment was commanded and exercised in the erection of that plant?

A. It is the best, the best builder we could obtain at that time was procured and the consulting engineer was employed.

Q. 22. By whom was the plant built?

A. The plant was designed and the construction was undertaken by N. L. Haynes of La Salle, Illinois, who bears the reputation of being one of the leading sulphur manufacturers along scientific

lines in the United States. At the time his services were engaged he was employed in Germany.

Q. 23. What business was he engaged in in Germany at the time?

A. I believe in the sulphuric acid business at the time.

Mr. DRAKE: We except to that as being information only.

Exception overruled and appeal taken.

Q. 24. I understand then, he is a man of highest attainment in his line?

A. Yes sir, he is so considered throughout the United States.

Q. 25. From the time that plant was put into operation in June 1909, has it or not been a practical success?

1129 A. It has been a complete success.

Q. 26. At the time the ores were roasted in open heaps, was all the sulphur content driven out of the ores in the roasting?

A. It was not, no sir.

Q. 27. How was the remainder expelled, or was it expelled at all in making the matte?

A. The ore, after being roasted and allowed to cool was then transported to the furnace and smelted in the same type of blast furnace we now use. All the sulphur content was expelled by this means possible. The remaining portion went into the copper matte. A portions went into the slag and a portion went into the flue dust, besides part that ascended as elimental sulphur, or floride sulphur from the top of the stack and furnaces.

Q. 28. Has the Ducktown Company always had a stack or chimney to its selter, since you have been connected with it?

A. When I was first associated with the company they had several small stacks, the furnaces were not connected and the stacks were much smaller and lower, about 1907 the present stack was built.

Q. 29. What is the height of the present stack?

A. 70 feet above the base.

Q. 30. During the period of open heap roasting, state whether or not there was always a percentage of sulphur expelled from the tops of the stacks, the smaller stacks?

A. There was a portion of the sulphur expelled from them, due to the particles which remained in the ores which was taken out in the operation.

Q. 31. Has the Ducktown Company ever refined copper to the point of making copper pig, and if not, through what process is the ore put and what product is made?

A. The Ducktown Company has never made finished copper, or pig copper. The product or manner in which the copper is

1130 marketed to-day and has been since the plant has been in operation is in the form of copper matte, containing approximately from twenty to twenty five per cent sulphur. The matte consists of combinations of sulphide of iron and copper.

Q. 32. What is done with this matter?

A. The matte is sold and shipped north to Bessemer Convertible plants and electrical plants where it is reduced into its pure state, the sulphur content in the matter of course is shipped in that shape.

Q. 33. For a time did the Tennessee Copper Company refine the matter when it was manufactured by the Ducktown company?

A. They are at the present and have been for years and for a considerable period they were purchasing the matte from our company and converting it into the blister copper at their works.

Q. 34. About how long since the Tennessee Company ceased to refine the product yielded by the Ducktown Company's plant?

A. I think our present sales contract goes back about four years, and prior to that time we were selling to the Tennessee Copper Company.

Q. 35. As I understand the Tennessee Copper Company makes matte and then refines it into copper pig.

A. The matte is melted and then poured into what is known as a Bessemer Converter, through which it goes. The plant oxidizes the sulphur, and sulphur dioxide, and oxygen of iron and other foreign contents, reducing it into a pig metal which assays approximately 99.5% copper known as blister copper.

Q. 36. Has that been the method of operations at the plant of the Tennessee Company since prior to 1906?

A. Yes sir, it has.

Q. 37. Now, I understand that about twenty five per cent of the matte that is manufactured by the Ducktown Company
1131 during all these years is sulphur?

A. Yes sir.

Q. 38. And what percentage of sulphur is left in the refined pig copper which the Tennessee company has made during these years?

A. The percentage of copper remaining in pig metal is practically nil. The pig metal, as I have previously states assays about 99.5% copper, the balance being composed of oxide, or rather oxygen to an extent and also contains a small amount of gold and silver making up that difference.

Q. 39. Have you any knowledge of chemistry?

A. I have, yes sir.

Q. 40. Did you serve as a chemist with this company?

A. I have. My first duties with the Ducktown Copper Company was as chemist.

Q. 41. Are you familiar with the ores worked by the Ducktown Company and have been worked for some years previous?

A. Yes sir.

Q. 42. Have you also seen the ores worked by the Tennessee Company?

A. Very frequently, yes sir.

Q. 43. Are those ores, the ores treated by those companies, both companies, largely mined in the Ducktown Basin?

A. All the ores treated by the Ducktown Company are mined on their own property in the Ducktown Basin. The Tennessee Copper Company mine some there and also does custom smelting, accepting ores from Cuba and other points.

Q. 44. How many mines has the Ducktown Company operated during the past three or four years?

A. During the past three or four years they have operated three

mines. The Mary Mine, the East Tennessee Mine and the Isabella Mine.

1132 Q. 45. In which one of them do the ores run the highest in sulphur materials.

A. The highest content of sulphur is contained in the Isabella Mine.

Q. 46. Approximately what is the content of sulphur in that ore as it is taken from the earth?

A. It varies from approximately twenty four per cent to as high as thirty per cent.

Q. 47. What is the percentage of sulphur in the other mines the company has operated?

A. The Mary Mine is much the largest producer, and averages as low as twelve per cent sulphur and as high as twenty per cent, and the East Tennessee Mine, our smallest producer, the ore here will average about eight per cent sulphur.

Q. 48. As I understand you, you do not smelt the same quantity of ores from these various mines?

A. Oh, no, no sir.

Q. 49. You smelt a good deal more from the Mary Mine than the others?

A. Yes sir.

Q. 50. Take the average of those ores during the years 1911, 1912 and 1913, what would the general average of the sulphur content be in the ores smelted?

A. It would be approximately fifteen per cent of sulphur.

Mr. DRAKE: We except to the question and answer as the books of the company would be the best evidence? Exception overruled and appeal taken.

Q. 51. I believe the books of the company would probably make about a car load, wouldn't they Mr. Lamoreaux?

A. Yes sir, almost.

Mr. DRAKE: We except to that question and the answer as being irrelevant and immaterial. Exception overruled and appeal taken.

1133 Q. 52. I will ask you if you know positively about what the content is without going back to Isabella and bringing the books here?

A. I cannot state positively.

Q. 53. I am not asking positively, but do you know approximately *what* the correct amounts?

A. I have a very close knowledge.

Mr. DRAKE: We except to the question as the books are the best evidence and they can be had. Exception overruled and appeal taken.

Q. 54. Just tell us for general information how the sulphur content is arrived at, commence with the process of taking the ore

out of the mines and how it is finally carried on to the books of the company?

Mr. Drake: We except to the question because General Drake who he refers to does not ask for the information and cares nothing about it. Exception overruled and appeal taken.

Q. 55. Give it to us for the benefit of the court if the General does not want it?

A. The ore is mined and broken underground to sizes which will be convenient to handle by the miners. It is done by drilling and blasting. It is then loaded into cars and trammed through the levels and slopes to the vent shaft, where it is hoisted in shift cars to the surface. It is then carried by tram cars to our rock breaker where it is broken into pieces convenient for handling in the furnace, that is pieces weighing in the neighborhood of twenty pounds. In the rock crusher, samples are taken at regular intervals, which samples are collected into one lot daily and are carried down and broken to convenient laboratory size, when they are sent to the laboratory for chemical analysis. This represents the daily sulphur and copper content of the ore, which per-
1134 centage is compiled and filed for that day, and gives the content of sulphur and copper in tons for the day's output.

Q. 56. How many times are those ores weighed in the usual process of mining and smelting?

A. They are weighed approximately four times underground, a record is kept by the miners, in the number of cars, which are trammed, each weighing approximately one ton. At the mill a second record is kept in a similar manner.

Q. 57. They are weighed there also?

A. They are kept there by count. Then after the ore is loaded into the cars the cars containing the ore are weighed on very accurate railroad scales, the tare of the car being taken off, giving the net weight, within one hundred pounds and the car averages four tons of ore. This ore is brought to our bunkers of the smelters and it is then loaded on to the charging machine. This charging,— At this charging machine the car is brought over another pair of railroad scales, Fairbanks Scales, where it is again weighed down to within five pounds, and all of the records are kept and compared in order to make settlement with the minders on their contracts, who keep a record of the amount of ore, and to keep a record of the amount of ore mined, and to compute the recovery of the copper in the ore.

Q. 59. Those records are kept in the ordinary course, for the ascertaining of the results of your operations?

A. Yes sir.

Q. 60. State whether or not they are the basis for the sworn reports that are made to the Chief Mining Inspector of the State of Tennessee and are required to be made up into that kind of a statement?

A. They are made annually to the State Mine Inspector
1135 and also to the United States Government.

Q. 61. I will get you to state whether or not those books

and records are kept in the usual way and kept by competent people?

A. They are kept by our book keeper, and we believe him to be thoroughly competent.

Q. 62. No one has ever questioned those records, that is the correctness of them, to your knowledge?

A. They have never been questioned to my knowledge. There is a duplicate record kept of the copper, it is kept by Ledoux & Company of New York, recognized copper assayers in the United States.

Q. 63. I will get you to state whether or not you took any figures from those books before coming here to testify in this case, and whether or not you have them with you?

A. I did obtain such figures.

Q. 64. You have those figures to speak from when you come to testify on those points?

A. Yes sir.

Q. 65. Now, before going into that, tell us about the operations of the Tennessee Copper Company, whether their operations are on a larger or smaller scale than those of the Ducktown company?

A. They are on a larger scale than ours.

Q. 66. How does the sulphur content of their ores compare with the sulphur content of the ores of the Ducktown Company?

A. Their main producer, known as the Burro-Burro Mine, contains considerably higher percentage of sulphur than any of our mines. The second producer known as the Polk County Mine, immediately adjoining our Mary Mine, being about the same type and character of ore as that contains the same percentage of sulphur.

1136 Q. 67. What would you say was the average sulphur content for their ores?

A. I could not state.

Q. 68. You state it is quite in excess of those of the Ducktown Company?

A. Yes sir.

Q. 69. To whom has the Ducktown Copper Company been selling sulphuric acid since its plant went into operation in 1909?

A. The acid is contracted for and sold to the International Agricultural Corporation in New York.

Q. 70. Where is it shipped to principally; what points?

A. Those points are designated by the buyer and shipped to points covering Tennessee, North Carolina, Georgia, Alabama and Louisiana.

Q. 71. To what use is that acid put?

A. The acid is used chiefly, almost solely for the manufacture of phosphate rock fertilizer.

Q. 72. When was *was* the acid plant of the Tennessee Copper Company put into operation?

A. It was put into operation in September, 1908.

Q. 73. Was that plant a success at the start?

A. It was not, no sir.

Q. 74. What was the size of the acid plant as compared with the yield of sulphur dioxide from the smelting operations?

A. I do not understand the question exactly.

Q. 75. Was the sulphuric acid plant sufficient to take care of the sulphur content that was expelled in the smelting operations of the Tennessee Copper Company?

A. By no means large enough, no sir.

Q. 76. Give us an idea, relatively, as to what size plant would have been required as compared to the one there, to take care of the total sulphur content?

1137 A. The original plant built there was estimated to produce four hundred tons of sulphuric acid daily, *of* which it never succeeded in producing as a normal production. The plant in operation to-day is claimed to be a twelve hundred ton plant, or to have a capacity sufficient to take care of twelve hundred tons of sulphuric acid, and that is not sufficient to take care of the smoke produced to-day. So, the original plant was not one fifth, as large perhaps, as would be required to take care of the smoke they are producing.

Q. 77. How many furnaces do the Tennessee Copper Company operate?

A. They have to-day seven furnaces.

Q. 78. And the Ducktown Company has how many?

A. Two.

Q. 79. During the growing season, generally, do the two furnaces of the Ducktown Company operate on full time?

A. They do not. During the growing season only one is operated, in fact, during the greater portion of the year only one furnace is being operated.

Q. 80. Prior to 1901 or 1902 what was the universal process of preparing ores -or smelting?

A. The usual process was what is known as the open heap roasting method, which consisted in piling the ores on piles of wood and igniting the same with the object of expelling the greater portion of the sulphur. This ore, then after having sufficient time to cool was smelted in blast furnaces. All the sulphur *was* discharged from these ores escaped in clouds of sulphur dioxide gas mixed with air which settled in the immediate vicinity.

Q. 81. Was there a new or different process discovered *in* the quiet about 1901 or 1902?

1138 A. Yes sir, there was.

Q. 82. By whom?

A. Experiments were being conducted at Stechal and different mines in New Zealand, and about the same experiments were being conducted by the then General Manager, W. H. Freeland. Mr. Freeland was successful in accomplishing the first smelting, the first person to succeed in this present method in the United States.

Q. 83. Mr. Freeland was at that time Manager of the Ducktown Copper Company?

A. Yes sir.

Q. 84. Was Mr. Renwick at that time Assistant to Mr. Freeland?

A. He was Assistant to Mr. Freeland.

Q. 85. Now, after Mr. Freeland discovered and built,—first I will get you to state whether or not it revolutionized the copper smelting industry throughout the United States?

A. Yes sir, it did. Open heap methods were surplanted by this method as rapidly as feasible to continue in operation.

Q. 86. When did the Tennessee Copper Company cease the open heap method, before they began the newer method of smelting ore?

A. The last open heaps were burning in 1903 and 1904, during 1904 practically all the roasted ore was worked up in the furnaces and in 1905 it was complete. And the pyritic smelting was in full force after that time.

Q. 87. The pyritic,—what is the pyritic process of smelting, which Mr. Freeland perfected?

A. The pyritic smelting is essentially the Dreck smelting by placing the ore in the furnaces without previous roasting operations. The Heap value or fuel value required for the smelting operations is obtained from the presence of the sulphur and the oxidation of the iron and the combination of that with silica,
1139 making sufficient heat, and in some cases a small amount of coke is used to make up the deficiency in the heat value.

Q. 88. State if you have lived in the Ducktown Basin ever since you became connected with the Ducktown Company?

A. I have lived there since April 1905 when I became connected with the company.

Q. 89. Have you a family there?

A. I have.

Q. 90. State how far you live from the Ducktown Company's smelting plant?

A. My home is directly overlooking the smelting plant and probably lies with- a half mile therefrom.

Q. 91. How far do you live,—what direction do you live from the plant?

A. Northeast of the plant.

Q. 92. Probably how many operatives are there that have families within.—I mean how many persons, irrespective of whether they are operatives, have families within say a mile and a half of that plant, the Ducktown plant.

A. I should say about a third of the employees live with- a mile of the smelter.

Q. 93. Tell us, since the acid plant was placed in operation in 1909, what if any, changed conditions you have noticed with respect to vegetation and gardens and the forests in this Ducktown Basin?

A. Every person living within the basin now have a small patch of ground which is engaged each year in growing small gardens or table vegetables, and a great many of the homes are growing house plants for ornamental purposes. And quite a number of people there are planting out small orchards and ornamental trees.
1140 All of these with a very few exceptions are growing very luxuriantly. In the outlying hills, the hills immediately surrounding the plant the grass is coming closer to the works each

year, as the small trees and shrubs are beginning to take on growth, so that the whole basin, which in 1906 was practically denuded is now assuming the appearance of growing vegetation.

Q. 94. Give us the tonnage, the total tonnage of ores melted by the Ducktown Company in the year 1910, likewise the sulphur content of those ores.

Mr. DRAKE: We except to the question without the witness knows without referring to any memorandum he has outside of the books. I demand the books as being the best evidence of the facts called for.

Exception overruled and appeal taken.

Mr. MILLER: I will state that as I understand the State Chemist of the State of Georgia is here present Mr. Stallings, I never met him until to-day, I am told he is a man of strict integrity and I now invite him, and he and General Drake and anyone else who wishes to see the books to go to Copperhill and there see them as long and go through them as long as you may desire, but it is utterly impossible to load up those books in a car, for years past and bring them down here. You are perfectly welcome to look through them, I understand the Georgia representatives have looked through them repeatedly and I extend a most hearty invitation to you to go again.

Mr. DRAKE: I will be glad to do that, and no doubt the Chemist of the State of Georgia will be glad to do so, sometime, but on account of the limited time it is not at our disposal, we cannot, therefore we would like to have the books present.

Q. 95. I understand that the Chemist of the State of
1141 Georgia and other agents have had access to the books and have been shown through them on their various visits to Ducktown?

A. They have on two or three visits there been offered every facility. We allowed them every opportunity to view the works and inspect our books and records and we will only be too glad to have them do so.

Q. 96. Did any representative of the State of Georgia,—Were they ever refused any information asked for?

A. No sir, of my knowledge, never. It has been the policy of Mr. Renwick to offer them every advantage and information which they might wish or require.

Q. 97. You hold yourself ready to do that at any and all times?

A. I do, yes sir, those are my instructions.

Q. 98. I will get you to state if you have brought with you here from the books as recorded in the usual course of business, the tonnages of ore smelted and the sulphur contents and,—commencing with the 1907 down to date?

A. I have such figures, yes sir, obtained personally before leaving Isabella.

Mr. DRAKE: I except to each question for the reason I have stated before that the books are the best evidence.

Exception overruled and appeal taken.

Q. 99. Have you prepared a synopsis showing the tonnage of ores smelted by years, from 1907, the percentage of sulphur and the total yield of sulphur since coming to Chattanooga?

A. I have.

Q. 100. I will get you to file that as Exhibit No. 1 to your testimony?

A. I do so.

Mr. DRAKE: We except to that because the books are the best evidence.

Exception overruled and appeal taken.

Q. 101. State, Mr. Lamoreaux, if the information con-
1142 tained in the summary is correct?

A. It is true and correct, with the exception of errors and omissions.

Q. 102. Is that an exact copy of what is shown on the books and records?

A. It is an exact copy as taken from the books as kept at Isabella.

Q. 103. How many chemists has the company had in its employ since 1906?

A. I think about six chemists including myself.

Q. 104. Do you know whether or not part of those are dead?

A. I do not think any of them are dead.

Q. 105. Where are they?

A. Most of them have left, not most of them but a number of them have left the employment of the Ducktown Company and are engaged in positions elsewhere.

Q. 106. These results of their various analyses were carried forward and placed on the books?

A. Yes sir.

Q. 107. And kept there as your permanent record?

A. Yes sir.

Q. 108. And that is those you have copied and brought here?

A. Yes sir.

Q. 109. Now, are you acquainted with the territory that intervenes between the plant of the Ducktown Copper Company — the plant of the Tennessee Copper Company?

A. I am, yes sir.

Q. 110. Did you or not prepare a map or drawing at one time when you were called to Chattanooga as a witness to testify in the Vestal litigation then pending in the United States District Court, showing something of this intervening territory?

A. I did, yes sir.

Q. 111. I show you a drawing which I am going to ask
1143 you to file as Exhibit No. 2 to your testimony and will ask you to explain it?

A. I do so.

Q. 112. Tell us what it is?

A. Profile of the territory between the plant of the Ducktown Copper Company and Lots No. 27, and 114 and 140 claimed to be owned

by the Vestal Brothers. This line extending through the Tennessee Copper Company's smelters. The scale is drawn on in accordance with the regular engineering practice, having a horizontal scale of one mile to two and one half inches and a vertical scale showing an elevation of 100 feet to each inch vertically.

Q. 113. That Vestal property, as I understand, was southwestwardly from the plant of the Tennessee Copper Company?

A. No sir, in a southwest direction,—Yes sir.

Q. 114. And that is the reason that this line was drawn in that particular direction, so as to show the intervening territory?

A. Yes sir, between the Vestal property and the Georgia line is just south of the Ocoee River, approximately through where this No. 3 line crosses. Thsi line is the Ocoee River, this is the Tennessee Copper Company's plant, this is the Burro-Burro Creek.

Q. 115. This map, as I understand, shows the stack, about the relative height of the Ducktown Company at the point marked D. S. C. & I. Co. Stack, or zero.

A. Yes sir, the elevation of the two stacks are drawn to the same scale and show relatively their difference in elevation.

Q. 116. And the bed of the Ocoee River is also shown the Tennessee Copper Company's stack standing near its bank?

A. Yes sir.

Q. 117. I will get you to state whether or not that drawing is substantially accurate, as shown from the Government map, both horizontally and vertically?

1144

A. They are taken from maps made by the United States Geological Survey.

Q. 118. I show you a similar drawing which I mark as Exhibit No. 3 to your testimony and ask you if you helped to make it?

A. I made it in person.

Q. 119. What does it represent?

A. This represents a section through the Ducktown Copper Company's smelter, and showing a line approximately east and west.

Q. 120. That is a cross section, just as if you cut down to the earth surface?

A. This is a vertical section with one section removed showing the contour of the earth, at the point if intersection. This is done to show the confines of the original Ducktown Basin, being bounded on the east by the Pack Mountains, a point shown as mountains south of Angelico Gap, on the east and on the west by Little Frog Mountain south of Panther Knob. The elevations and lines are taken from the United States Topographical Map.

Q. 121. I show you a similar drawing, which I file as Exhibit No. 4 to your testimony and will ask you if you made or helped to make that?

A. I made this also.

Q. 122. That was also made as one of the company's Exhibits, I believe, for use in the Vestal Case, while you were temporarily in Chattanooga attending court last year?

A. Yes sir.

Q. 123. Now, tell us what this Exhibit No. 4 represents?

A. This is a profile, or partial section taken approximately north and south through the socalled Ducktown Basin, bounded on
1145 the north by a point indicated as Stansberry Mountain and on the south by the mountains to the south of Chestnut Gap. The stack shown in green is the stack of the Ducktown Copper Company and the stack in blue is the stack of the Tennessee Copper Company, all measurements horizontally and vertically were taken from the Topographical Maps of the United States.

Q. 124. It appears from that map that there is a hill near the Ducktown Company's stack, and between there and the Tennessee Company's stack as you go southward; is that correct?

A. Yes sir. The object of this map was to show the obstruction to fumes from the Ducktown Copper Company's plant in progressing southward.

Q. 125. What does the blue line represent on Exhibit No. 2 the wavy blue line from the stack of one company to that of the other?

A. The blue line indicates the profile as shown on Exhibit No. 4 covering that portion that is superinterposed upon Exhibit No. 2—is that clear?

Q. 126. I would like for you to tell us in detail why the elevations on Exhibit No. 2, do not appear like they do on Exhibit No. 4?

A. The Exhibit No. 2, its elevations are taken in a northwestward and southeastward course, while on Exhibit No. 4 they were taken on a line approximately due north and south.

Q. 127. Do I understand that Exhibit No. 4 represents a cross section taken on or near the line running directly from the stack of the Ducktown Copper Company to that of the Tennessee Copper Company?

A. Yes sir, these two stacks are on the section line I took for the profile shown on Exhibit No. 4.

1146 Q. 128. How about on Exhibit No. 2, do they lie on the same line, if not what is the difference?

A. The profile shown in red on Exhibit No. 2 is on the line directly through the Ducktown Copper Company's plant, but it does not pass through the Tennessee Copper Company, but the blue line as superinterposed upon this shows the profile between the two stacks.

Q. 129. The red line on Exhibit No. 2 as I understand, would leave the Tennessee plant considerably to the east of it?

A. To the east?

Q. 130. Yes sir, approximately how far?

A. A half mile.

Q. 131. That red line is drawn to extend from the Ducktown Plant in the direction of mine No. 20 in the profile section; will you please take the map that is filed as Exhibit No. 1 to the testimony of W. M. Bowron in this case, and indicate by markings on that map the line shown on your Exhibits Nos. 2, 3, and 4.

A. I will do —, yes sir.

Q. 132. Now, Mr. Lamoreaux, assuming that any damage is being done south of the Georgia line to the vegetation forestry and crops by the smelting operations of either of the two companies operating

in the Ducktown Basin; I will ask you from your knowledge and experience to which of the two you would ascribe such damage and why?

Mr. DRAKE: I except to the question as calling for a conclusion without any facts having been stated on which to base such conclusion and calling for an answer to an issue in this lawsuit.

Exception overruled and appeal taken.

A. If any damage is being done by copper fumes escaping
1147 from either of the copper plants, would it not be reasonable to believe that the smelter nearest to the property alleged to be damaged would be the most probable cause. Aside from that the volume of fumes sent out by either plant would be supposed to do damage in proportion to such volume, the greater volume producing naturally the greater damage.

Q. 133. And which of the companies produced the greater volume of fumes, and has for the past several years?

A. The Tennessee Copper Company.

Q. 134. Now, is it or not a well recognized fact that bodies, running bodies of water have an affinity for sulphur fumes and conducts them?

A. I do not believe that they have an affinity for them, nor conduct them, but the sulphur fumes are claimed to follow such depressions.

Q. 135. Is not that by reason of the circulation of the air currents?

A. It is due practically to the circulation of winds and air currents.

Q. 136. Do the air currents along the Ocoee River — the same by day and night or are they reversed?

A. I do not think there is any relation between the winds during the day or night, it is a question of atmospheric conditions.

Q. 137. Then if air is blowing,—If the wind is blowing up the river, they probably send the fumes up the river, and if the winds are blowing down they send them down.

A. Yes sir.

Q. 138. Which of the plants is most favorable located for the fumes to be distributed up and down the Ocoee River?

A. The plant of the Tennessee Copper Company, it being located almost immediately upon the Ocoee River.

1148 Q. 139. What do you say of the possibility or probability of the fumes from the Ducktown Company being dispelled and dif-used into the atmosphere before reaching the line of the State of Georgia?

A. After taking a straight air line, it would have to encounter a number of hills and other obstructions, if it followed the meandering creeks and streams, it would be a great many miles out of its direction.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 1. What schools are you a graduate from, Doctor?

A. I am not a graduate from any school, except the High School.

Q. 2. What chemical knowledge you have, has been gotten in the way of studying at the plants where you have been working?

A. No, I studied chemistry in two Universities, but never,——

Q. 3. You did not finish your degrees there?

A. I did not finish my degrees there, no sir.

Q. 4. Well, what is the specific gravity of sulphur dioxide?

A. Compared with what?

Q. 5. Compared with air.

A. Compared with air, it is approximately 2.2.

Q. 6. I will ask you if it is not laid down by the best of authors *that* 2.21

A. That is approximately 2.2.

Q. 7. Are you familiar with the dif-usion of gases?

A. Yes sir, I believe so.

Q. 8. Well, tell us how they dif-use?

A. Well, two gases of different composition can be dif-used
1149 with each other to form ultimately a gaseous mixture of uniform compositions provided they are put under suitable conditions for such dif-usion.

Q. 9. What is the effect of heat on gases?

A. The effect of heat on gases, if they are not confined, is to increase their volume; if they are confined it is to increase their pressure.

Q. 10. On sulphur dioxide, what would be the effect of heating it in those furnaces there at Copperhill and at Ducktown and releasing them through the stack?

A. The gas, of a given temperature, sulphur dioxide, for instance; when heated in the furnace, it would increase its volume.

Q. 11. Increase its volume?

A. Yes sir.

Q. 12. What other effect would it have on it?

A. It would decrease its density or weight per cubic foot.

Q. 13. What is that other?

A. It would decrease its density, or would,—what corresponds to its weight per cubic foot.

Q. 14. That would effect its density and make it rise?

A. It would, provided the surrounding gases were heavier.

Q. 15. At what heat do you smelt copper at the furnaces?

A. The temperature of the slag as it comes from the furnace is probably the best measures of the heat in the furnaces and that is in the neighborhood of 1700 degrees Centigrade.

Q. 16. How much lighter would that make this sulphur dioxide fumes than the air?

A. The sulphur dioxide fumes do not come in contact with the air at all.

1150 Q. 17. If your furnaces are as hot as your slag, as the slag comes out?

A. I stated the temperature of the slag is the best measure of the highest temperature in the furnaces, the slag comes from the bottom of the furnaces and the gas is emitted from the top of the furnace.

Q. 18. Then would not the gas be as hot as the *the* furnace?

A. It might be within the smelting area, but not as it is at the point where it leaves the smelting surface of the ore.

Q. 19. It all starts out of the furnace and it is necessarily as hot as the furnace, and would it not be 1700 degrees?

A. No sir, it would not.

Q. 20. Why not?

A. As I stated before, the slag flows from the bottom of the furnace, and superimposed over that is the charge of partially melted rock, ores and flux, and upon that is the charge which is continually being poered in the ore which is practically at atmospheric temperature, and therefore the gases in passing through that superimposed charge is cooled down to a great extent. I can answer that best by stating that the gases leave the surface of the ore charge at a temperature in the neighborhood of 800 degrees Centigrade, that is the normal temperature at the top of the ore furnace. It varies in different types but our furnaces are approximately at that degree.

Q. 21. That is what I am asking. Isn't it the character of *hases* and all ores, when heated, that it rises, the hottest part rises to the top and the cool settles to the bottom?

A. That is correct, yes sir.

Q. 22. And would not the air, what little there be in the furnace, and the gases in the furnace at the top be hotter than the bottom?

1151 A. Yes.

Q. 23. Until it escapes from the confines of the furnace?

A. That is true, yes.

Q. 24. But would not it necessarily be as hot, or hotter than the slag that runs out at the bottom.

A. At the surface of the slag the gases in contact with it would be approximately the same temperature.

Q. 25. Then it would be approximately 1700 degrees at that point?

A. At the surface of the slag, or molten contents of the furnace.

Q. 26. How much hotter, or how much more bouyant would these gases be at that point than air, speaking relatively?

A. I cannot follow your question. How you would have it different under such conditions as that, I do not quite follow your question.

Q. 27. Well, to speak in plain English, Mr. Lamoreaux don't these gases get out of the top of the stack and go straight up into the air for some distance unless the wind is blowing?

A. Yes, if the wind is not blowing the gases ascend from the top of the stack.

Q. 28. Is not that usual?

A. Yes sir.

Q. 29. They go straight up for one hundred to two hundred feet? Piling straight up on a quiet day?

A. Not absolutely a calm day, I think that the gases do extend one hundred, or it is possible two hundred feet into the skies on an absolutely still day.

Q. 30. I will ask you if there is an upper current of air passing over the tops of the hills and which would pick up the fumes and drive them on with it?

A. Yes sir, that is a possibility of course.

1152 Q. 31. And is not it a natural consequence of coming in contact with winds, it would drive them whichever way the wind is blowing?

A. You are defining specific conditions?

Q. 32. I say if those conditions prevail as I have described to you, would not that be the effect?

A. It would be.

Q. 33. How much sulphur dioxide are you turning loose from the top of the stack every day?

A. I could not state off hand.

Q. 34. You said you could state in chief how much you were smelting and how much sulphur there was in it, and all those questions about the copper you were making and the sulphur retained in your ore, and yet you cannot tell how much dioxide you are turning loose?

A. I did not give any such answer.

Q. 35. Didn't you answer that?

A. No sir.

Q. 36. Didn't you tell Mr. Miller you retained a certain per cent of copper in your slag?

A. No sir, I did not.

Q. 37. How is — you retain twenty four per cent sulphur in that matte when there is not but twelve to twenty per cent in the bulk of ores?

A. It is very simple, the ores in going through furnaces are gradually concentrated before it is reduced to the form of matte, so the ore originally containing ten per cent would be concentrated into half the volume and it would retain thirty per cent; in plain and simple English the matte contains this sulphur in the same proportion.

Q. 38. And you do not release it into the air?

A. Yes sir, that is true.

1153 Q. 39. What per cent of sulphuric acid do you get out of your ore?

A. There is no sulphuric acid in the ore.

Q. 40. How much sulphuric acid do you get out of the sulphur in the ore?

A. I can refer to my figures and tell you.

Q. 41. Can you not tell, being an expert, off hand, without referring to the book?

A. How much sulphuric acid we get from the sulphur contained in the ore?

Q. 42. Yes, sir, the percentage?

A. No, I cannot tell that.

Q. 43. But you have got the book here to refer to, find that out.

A. I have some notes here to refer to. I can refer to them and see. May I have Exhibit No. 1, will you please repeat your question Mr. Drake?

Q. 44. I want to know what per cent, how much sulphur dioxide is in your ore, and how large a per cent of it you save in sulphuric acid?

A. Your question, Mr. Drake, calls for a computation because there is no sulphur dioxide in the ore.

Q. 45. Well, the sulphur you make into the sulphur dioxide, don't you make it into the sulphuric gas?

A. Yes.

Q. 46. If you can tell me how much sulphur there is in the ore, you can tell me how much sulphur dioxide is in the ore?

A. Yes.

Q. 47. Well figure either way you want to, and tell me how much, I want to get the facts?

A. I have all the facts here, if I can understand your question so as to answer intelligently. I have the sulphur content
1154 for the,——

Q. 48. I will put the question in another form. What per cent of the sulphur that is in your ores do you convert into sulphuric acid?

A. Well, that calls for some more computation, again, I cannot answer that without it.

Q. 49. Well, approximately, we have to figure on that, I think we all understand that.

A. The company tries to take care of all of it.

Q. 50. That is not my question, I want to know how much you save, that striving has been going on for a long time.

A. For example, suppose we take 1913, there was contained in the ores treated 29,783.19 tons of sulphur. Now, of that sulphur content in the ore 1,357.22 tons went into the matte, which was shipped away; 12,408.42 tons of sulphur went into the sulphuric acid, which was shipped away; 2,536.3 tons of sulphur was contained in the slag, which was thrown away, and 345.7 tons of sulphur was carried out of the furnace in the form of flue dust. The sum total being 16,680.64 tons of sulphur accounted for.

Q. 51. How much sulphur was accounted for?

A. 16,680.64 tons.

Q. 52. How much sulphur did that leave that was not accounted for?

A. 13,102.55 tons.

Q. 53. As compared with 16,680.64 tons?

A. There was 16,680.64 tons accounted for and there were 29,783.19 tons in the original ore.

Q. 54. Then, you saved, according to those figures something over half of the sulphur?

A. Yes sir.

Q. 55. How much copper did you make in 1912?

1155 A. I have not the figures for the copper production here.

Q. 56. Well, matte, you talk about, that is what you say contained that twenty four per cent?

A. 1913?

Q. 57. 1912?

A. 1912, the other figures I gave were for 1913.

Q. 58. I want to know how much copper you made in 1912?

A. 11,029,575.

Q. 59. That means pounds, does it?

A. Yes, sir, pounds of matte.

Q. 60. Your company has been paying some enormous dividends, haven't they, Mr. Lamoreaux?

Mr. MILLER: I respectfully submit to counsel that is asking the question that this is entirely foreign to this issue, a question of what dividends have been paid as to the destruction by sulphur, and I further submit, as we have no commissioner here to make the ruling,——

Mr. DRAKE: (Interrupting.) The purpose for which I ask the question is only for the purpose of illustrating the output in copper of this copper company or otherwise.

Mr. MILLER: I understand the witness gives you the figures, the total of the copper yield, now, as to what they sell the copper for, or what disposition they make of it, I submit is entirely a commercial proposition.

Mr. DRAKE: I do not — that I will, Mr. Miller, but if I should question the figures you can see where it would,——

Q. 61. State whether or not you know anything of the profits from the operation of these companies,—of this company

1156 and if not, why do you not know?

A. I know nothing about the actual financial matters of this company, its profits are not looked to in this business, that is all conducted in London, where this company holds its head office.

Q. 62. I will ask you, Mr. Lamoreaux, to look at pages 325, 326, and 327 of the Copper Hand Book, Volume 11, by Wood, 1913, and look at these figures, and especially on pages 325 and 327 and answer if this company since 1906, on the common shares of the stock have not paid 335⅓ per cent and on the founders shares dividends amount to 77.778 per cent?

A. I beg to respectfully submit that I have no knowledge of that publication and cannot corroborate or authorize those figures.

Q. 63. You do not know whether they are correct or not?

A. I do not know.

Q. 64. How?

A. No, sir.

Mr. MILLER: Now, the purported extract from this book I respectfully submit is wholly foreign to this issue.

. Look at what purports to be the output of this company 1911 and 1912 on page 327 of this same volume and state those figures are correct as to the output?
give the same answer as before.
. I am asking you as to the output, Mr. Lamoreaux.

ILLER: I object to anything that is in the book being in- into the record, but have no objections to the witness com- nything that is there with what he knows to be true.

respectfully wish to say that is my purpose here to give you ll the information here in my means, but I do not think that in justice to myself, or to the company which employs ne, I should give credence to any figures I am not authorized which I have no control over.
. I am asking you if they are correct?
lo not know.
. Look at them and say, you know what the real figures of npany are, refer to these pages and to the memorandum you l say if they are correct?
ney do not correspond, the figures given here are in copper, I have are in matte.
. Don't you know, Mr. Lamoreaux, the general percentage r contained in the matte?
ır matte contains from forty four to forty seven per cent r, as it is shipped. It would be *nearly* a method of dividing tiplying to get that figure.
. Then you would not want to speak from these books and ther or not they are correct?
o, sir, I would not. I have no knowledge of the source of rmation contained in them. They publish this hand book opper producers of the United States. It is published annu- l purports to give the reports of the different copper com-

. You are not willing to express an opinion as to whether correct or not? Although you do know the output of the y?
am not disputing the accuracy of the book, I am answering nat I will be glad to give you such figures as I have in my n in regard to the company. They are taken from the com- y's books by me before leaving Isabella.
. The condition you speak of as obtaining in your section elative to the crops and vegetation was purely local was it ot, Mr. Lamoreaux?
A. That is in the Ducktown Basin, a distance, I have me three or four miles out on the roads surrounding the

. That is what you would call local conditions?
es.
. You do not know what the conditions are away down venty miles in Georgia, do you?
o, sir, I do not, definitely.

Q. 75. I will ask you also, locally, between the two stacks, the Stack of the Tennessee Company and the Stack of the Ducktown, if the tops of those ridges and hills are not entirely denuded of all timber?

A. They are, yes, sir.

Q. 76. And if it is not a fact that smoke when winds rise with them above the top of the ground, there is no vegetation of any kind to stop them or di-fuse them or in any way hinder their pro-fress until they are in Georgia, if the wind is blowing that way?

A. There is no vegetation in the country lying between the two plants in a straight line.

Q. 77. I believe you stated, but Brother Hill does not remember exactly about that, and I do not either, so I will get you to repeat if I have already asked you. The fumes or smoke that rise from your furnace stacks, if it is not visible at times for one hundred to two hundred feet in the air?

A. No, I do not think I have ever seen it one hundred feet in the air.

Q. 78. Well, it is visible at all times, is it not, Mr. Lamoreaux going into the air for some distance?

A. Yes, sir, it is visible when escaping from the stack.

Q. 79. How far is it visible up into the elements?

1159 A. It depends entirely upon the direction and velocity of the winds. Ordinarily — we have a light wind blowing, the smoke breaks off almost directly with top of the stack, and I do not believe it is ever raised over fifteen feet above the top of the stack if blowing a southerly direction. If blowing in a southerly direction it must first encounter our tall acid chamber which is higher than the stack and is broken up, and if the wind is from the south blowing northwardly it immediately crosses the creek and encounters an old open pit, and di-fuses immediately in the vicinity of the smelting plant.

Q. 80. That is your opinion, is it not?

A. It is my opinion, and it is also the actual facts.

Q. 81. Were you up in the air south of there to notice the fumes to see whether they were going south up over the hills to see or catch any of the fumes and see whether it was higher over there?

A. Hardly, it is perfectly visible standing on the ground.

Q. 82. Don't you know at times, under certain atmospheric conditions that you can hardly see it?

A. No, sir.

Q. 83. Don't you know when the air is damp and heavy it is much more easier to see?

A. That is true, if the air is damp and moist the smoke is much more evident to the eye.

Q. 84. What you mean by smoke is the gases coming out of the stack?

A. Yes, sir.

Q. 85. You see the gas come out of the stack and you can smell it?

A. Yes, sir.

Q. 86. Black smoke?

A. Yes, sir. Hydrate of carbon produces a very light smoke.

1160 Q. 87. What smoke you see issuing from the top of the stack is what you would call sulphur dioxide?

A. Yes, sir, the commonly applied name, as a matter of fact the sulphur dioxide smoke, is not visible.

Q. 88. I believe you stated your first experimental plant was a failure?

A. It was practically a failure, it had no value we could see that would justify keeping it.

Q. 89. You threw it out?

A. Yes, sir, absolutely scrapped it.

Q. 90. When did you open your present plant?

A. On the 11th of June, 1909, that is the date it was put into operation.

Q. 91. That is the one you have now, it was put in then?

A. Yes, sir.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 1. Mr. Lamoreaux, can you refer to the notes that you have and tell us during what months the greatest quantities of ore are smelted during the past two or three years?

A. I can tell you the months during which we produced the greatest tonnage, and that is the best indication of the smelting operations at the plant.

Q. 2. I understand you ship that matte away?

A. Yes, sir.

Q. 3. You weigh it carefully?

A. Yes, sir, we weigh it carefully on beam scales, stillyards and again on railroad scales and finally in New York at its destination.

Q. 4. Take the matte weighed for the year 1912, and give us the amount of ores smelted in May, June and July, 1912?

1161 A. In May, 1912, we shipped 944,760 pounds of matte; in June, 741,000 pounds; in July 857,555 pounds of matte.

Q. 5. Now, what was it in December of 1912?

A. In December it was 1,103,365 pounds.

Q. 6. Now, take the months of June, July and August 1913, what were your shipments?

A. In June, 1913, 927,777 pounds; July, 846,000 pounds; in August it — 798,685 pounds.

Q. 7. Now, take the last three months of that year and give us the matte shipments?

A. In October it was 1,140,450 pounds; in November it was 1,221,720 pounds; in December it was 1,070,370 pounds.

Q. 8. Now do your matte shipments in those various months compare with the tonnage of ore smelted?

A. In direct proportion.

Mr. DRAKE: I except to all the answer in figures because the books would be the best evidence.

Exception overruled and appeal taken.

Q. 9. What is the reason for the smaller quantities of ore smelted in those months and the consequent smaller shipments of matte?

A. It has been a general instruction of our General Manager that the furnace production be curtailed during the growing season of the year, that is from May until September.

Q. 10. Has that been the policy of the company?

A. That has been the policy for the last four or five years.

Q. 11. Now, in the statements you have made to General Drake, on cross-examination about the percentage of sulphur reclaimed and the percentage that is supposed to be eliminated, could you state whether or not that is a liberal view in favor of the
1162 contention of the State of Georgia, or is it a liberal view in favor of the Copper company?

A. The figures are really very liberal in favor of the contention of the State of Georgia inasmuch as he has not taken credit for a considerable amount of sulphur taken up in the process of the manufacture of sulphuric acid and does not contain allowances of credit for a great amount of smoke around the furnace and the amount taken up in acid compounds, or acid contents of sulphur in the shape of flower sulphur, and some which escapes in the shape of gas hydrates and other compounds.

Q. 12. Then you have resolved every doubt against the company in making that calculation?

A. I have, yes, sir, I have given the benefit of every doubt to the other side as far as justice permits.

Q. 13. Do you or not see any substantial damage that is being done in the smelting operations of the Ducktown Company as far south as the Georgia line?

A. I think not.

Mr. DRAKE: We object to that as asking for a conclusion without any facts to base it on.

Exception overruled and appeal taken.

Recross-examination.

By J. A. DRAKE, Esq.:

Q. 1. Will you please give the head of each one of the departments of your company, beginning with the Superintendent,—well, all of the officers, President, Superintendent and on down,——

A. The local officers?

Q. 2. I mean the Ducktown Sulphur, Copper & Iron Company, beginning with the President, who is the President?

1163 A. The Managing Director is J. G. Gordon, who has the position corresponding with the president of American companies.

Q. 3. Where does he live?

A. He lives in London.

Q. 4. I just wanted to know the president.
A. J. G. Gordon.
Q. 5. Who are the officials in charge up here at the plant?
A. Mr. C. W. Renwick, General Manager; I fill the position of Assistant Manager, E. L. Larison is Superintendent of the Acid Plant, Mr. A. Nolde is Smelter Superintendent, Mr. W. E. Robinson is Master Mechanic, Joseph H. Taylor is Mining Engineer, and Mr. A. Bennett and John Quinn are mine captains.
Q. 6. Who is your shipping clerk?
A. The shipping of the matte and copper and the consignment of them is done through Mr. W. R. Barron, and G. B. Fariss.
Q. 7. Who ships the sulphuric acid?
A. Both are shipped by these two men.
Q. 8. The foremen of the mines, don't they have something to do with the weighing and handling of the ore there?
A. The mine foremen, they have nothing to do with the weighing of the ores.
Q. 9. Who is your book keeper?
A. Mr. W. R. Barron.
Q. 10. And is he the one you spoke of here as the shipping clerk?
A. Yes sir. There is one,——
Q. 11. There is one other thing I want to ask about, how long have you been carrying on this curtailment during the growing season you spoke of?
A. Well, the last four or five years, in fact that has been practiced ever since the building of the acid plant.
1164 Q. 12. I believe you stated you built the acid plant because the State of Georgia had that injunction over you?
A. That was the prime reason, yes sir. In compliance with our promise and obligations to the State of Georgia, to fulfil- their orders in curtailing the smoke nuisance.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 1. Mr. Lamoreaux, it may be objected to, but I wish you would get and file as an Exhibit No. 5 to your testimony a statement of the shipments of acid by months for the last three years, do you keep a record of that?
A. I can get the record from the first day we shipped acid.

Mr. DRAKE: We will object to that on the same grounds as already stated, that the books are the best evidence of this.
Exception overruled and appeal taken.

Q. 2. Mr. Lamoreaux, do you know why any additions were made to the acid plant of the Tennessee Copper Company in the last few years, and if so, when they were completed and put into operation?
A. There has been considerable enlargement in the plant in the last three years. The original plant built in 1906 and 1907 and started in operation in 1908 was calculated to take care of four hundred tons of sulphuric acid a day.

Mr. DRAKE: Which plant are you speaking of, the Tennessee?

A. The Tennessee Copper Company. And this was operated for several years with numerous failures and difficulties and on account of the failures they changed consulting engineers, or rather employed another consulting engineer and remodeled the old plant and designed an additional plant to supplement the original four hundred ton plant, this plant was completed about two years
1165 ago and it has been gradually added to. The plant is estimated now to take care of twelve hundred tons of sulphuric acid daily, they are not, however, producing that tonnage to-day. The transformation from the original small unit to the present larger unit began about three years ago and was completed something like two years ago.

Q. 3. You heard the testimony of Mr. Peter S. Gilchrist and Mr. J. M. McCandless to-day?

A. Yes sir.

Q. 4. Some suggestion was made of the disparity in the figures given by those, and the figures given by yourself as representing the sulphur dioxide that escaped during the ninety two days, I believe, it was prior to their visit in September last, can you explain that?

A. The visit of Messrs. Gilchrist and McCandless was, I believe during the month of September and the figures that they show, that they used for their calculations were taken for the period covering some three months previous to that, that is what we call the growing months of the year, during which time the Ducktown management makes every effort to curtail their production and are doing so by decreasing the tonnage smelted so the months they had represent the months in which the operations were carried on at a much lesser magnitude. It is natural that their figures should be lower than the figures I gave, mine coming in 1913 would result in an average for a total year of something like three hundred days. Whereas, the average for three months was something like 16 tons of sulphur emitted, that will, I believe fully explain the discrepancy.

Q. 5. Your average was based on the entire yearly output and theirs during the growing season?

A. Yes sir.

1166 Mr. DRAKE: We except to this last, it is a repetition of the original examination.

Further Deponent Saith Not.

——— ———.

Sworn to before me this 20th day of June, 1914.

———— ————,

Clerk and Master.

1167 PETER S. GILCHRIST, the next witness called, being first duly sworn, upon examination, deposed as follows:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. Mr. Gilchrist, how old are you?

A. Fifty-one.

Q. 2. Where do you live?

A. Charlotte, North Carolina.

Q. 3. What is your profession or avocation?

A. Chemical engineer, building acid plants, and plants to take care of obnoxious vapors, such as fertilizer plant.

Q. 4. How long have you been engaged in the business of acid plants and reclamation of obnoxious vapors?

A. About twenty-five years.

Q. 5. Are you or not familiar with the construction and operations of sulphuric acid plants?

A. Yes sir.

Q. 6. What experience have you had in years, in the construction and investigation of sulphuric acid plants?

A. About thirty years ago I came to this country and installed the first mechanical furnace for making sulphuric acid at Richmond, Virginia, when they were discovered by Boicities, the very first furnace making it at Richmond, and afterwards the Standard Oil Company took it up and it went through. Then I have built, of course, a great many plants over all the country, superintended the operation and things like that, and been at it all my life.

Q. 7. Have you or not made a study of the obnoxious gases, their diffusion and their relation to each other?

A. Yes sir, because I build plants and take care of it, to overcome the odors all through the country, and naturally I have to take care of the gases in itself, before I can build a plant to take care of it.

1168 Q. 8. Have you studied and are you familiar with the law of the diffusion of gases?

A. Yes sir.

Q. 8. Are you the same Mr. Gilchrist who made an affidavit in this case some months ago?

A. Yes sir.

Q. 10. Prior to the framing of that affidavit, did you visit the works of the Ducktown Copper Company, at Isabella, Tennessee?

A. Yes, sir, Dr. McCandless and I were there together.

Q. 11. Had you previously been to the works of the Tennessee Copper Company at Copperhill?

A. Yes sir, just on a visit, interested in the operations.

Q. 12. Had you been through the plant?

A. Yes, I have spent a night there.

Q. 13. Are you familiar with the operations carried on by both of those companies?

A. Yes sir, I do not know what the Tennessee Company is doing since my last visit, but I know up to that time.

Q. 14. When was the last visit that you made to the works of the Tennessee Company?

A. I would say, I cannot quite recall, it must have been two and one half years ago, something like that. I cannot give the exact time.

Q. 15. Did you know that Ducktown Basin section before the acid plants were installed?

A. I had gone through, but made really, no special note of it, just out on the railroad is all.

Q. 16. About when were you in the Ducktown Basin, at the instance of the Ducktown Copper Company?

A. Last September, 1913, about that.

Q. 17. You were then in company with Dr. McCandless, of Atlanta.

A. Yes sir.

1169 Q. 18. What was your mission down there, Mr. Gilchrist? What did you go there to do?

A. The Ducktown Company asked me if I would come down and examine the plant and see its operations, and asked if I could give a report after seeing it. I said I would be glad to come, and give it exactly as I found it, and no other way.

Q. 19. Do you know whether or not that was because the State of Georgia was making a certain demand on the company?

A. I think it was, something about that. I do not know very much about the business, though.

Q. 20. When you were requested to go there, and make observations and report, were you asked, or was it suggested in anywise by the company or anyone for it, that you color your report, or give it in good faith, as you found it yourself?

A. No, Mr. Renwick said for us both to come out and see the plant, and give it just as we found it.

Mr. DRAKE: We except to anything Mr. Renwick might have said, as being hearsay.

Exception overruled, and appeal taken.

A. There was no influence brought to bear on us in any way.

Q. 21. Did you or not, honestly ascertain and truthfully report the conditions as you found them?

A. Just as we found them.

Q. 22. Is that report in writing?

A. That is right.

Q. 23. Did you exhibit that report in connection with your affidavit in this case, or a copy of it?

A. Yes sir.

Q. 24. Now, Mr. Gilchrist, it is maintained by the State of Georgia, that the operations of the Ducktown Copper Company, as normally carried on at Isabella, is doing damage south of the Georgia line, southwestwardly and southeastwardly from Isabella,

1170 I want you to tell us whether you found that to be so, and if you think that untrue, then tell us why?

A. The acid plant was working about as fine as any plant I have

ever seen, it was absolutely nitrius, no sulphur coming out at all. There was traces, you know, but I mean of any amount. Otherwise the nitr-us acid gas could not come out of the same stack. And you not have the red foxtail where there is any imposition of the sulphuric acid. And all the sulphur was going through the condensing chambers, flowing in and the gas was coming from the chambers and went through them,—was absolutely condensed. In fact, we figured out there was about fifteen hundred pounds of sulphur which checked over. There is always a little trace carried out in the death plant, that we can find, so that was virtually doing ideal work. We went through the books, we got the ore used over a period of ninety-two days, we got the sulphur contents of that ore, and the amount of ore used from the different mines, that was the amount of ore actually used during that ninety-two days. Then we got the sulphuric acid shipment, we had so many days and the sulphuric acid books shows that, and the amount of matte, flue dust, and that all totalled up, and the difference between what we got, and what was charged was a loss. We did that as nearly accurately as it was possible for anyone to get at that lot of care.

Q. 25. Then, what conclusion did you arrive at, with respect to the damage being done by the operations of that company, south of the Georgia line?

A. I cam*a* to the conclusion after sleeping there, spending the night, and the wind fortunately happened to be blowing that way. I had my window open, and in a direct line, I was not bothered at all. I was just about half a mile,—we slept away from the
1171 plant on the hill about a half a mile, there was no trouble at all. I did see on the porch door a vine which had been scorched, and I directed Dr. McCandless' attention to it. It might have been caused by the gases, but we figured out that there was about sixteen to seventeen hundred tons of sulphur that we could not account for. We could not, of course, account for the flo*w*ers of sulphur, we had no way to do that, and gave them as a loss, due to the operation. There were flo*w*ers of sulphur which come out only at the furnace. It is no loss, except through the charging, when you open the top of the furnace to p*o*re in the ore, and during that time, flowers of sulphur would come out. Now, sulphur dioxide was present, and when they would open the furnace top to feed the ore in it, it would come out. We saw it drop out, but we could not measure that and give any credit, so really our report is not quite as it ought to be, but we have no way of estimating how much, only as we have. As we had no way of collecting these flo*w*ers of sulphur, we gave it as a loss.

Q. 26. What would be the result of this outflow of sulphur when the furnace is charged, does that do any harm to vegetation, at any distance?

A. No sir, I am satisfied it does not. May I explain that?

Q. 27. Yes.

A. Right in the city of Chattanooga, there is approximately six thousand, five hundred tons of coal used per annum, carrying one per cent of sulphur, that figures out about seventeen tons a day,

almost identical with what is the output there, the average comes in every day. I do not know exactly the amount each day, but an average comes in through the year. I have been in Chattanooga many many times, when I could find traces of it. Even this morning, from the hotel window, I happened to get a trace of it this morning.

1172 Q. 28. That is out of the coal known as soft coal, and which we use throughout this section, do they carry a per cent of sulphur?

A. Yes, one per cent is the minimum.

Q. 29. And is that sulphur content eliminated in the burning of the coal?

A. It is eliminated in the burning of the coal, yes, sir. It is eliminated through the city in the manufacturing plants, the same as in a smelting plant.

Q. 30. And is the sulphur which is eliminated here, eliminated in the form of sulphur dioxide?

A. Sulphur dioxide and carbon gas, of course, there is a great many of the carbon dioxide gases.

Q. 31. As I understand you you say there are about seventeen tons of sulphur that you did not account for in what period?

A. The average daily for ninety-two days.

Q. 32. You just took that from the company's books, as kept?

A. Yes, sir, just for the company's books as they keep them.

Q. 33. Did you take their shipments of acid?

A. He brought all his books and laid them before us.

Q. 34. The books were the large ones kept in the company's office?

A. They are the books of the company.

Q. 35. Now, on the assumption that there was a daily yield of ten tons of sulphur there that was eliminated at the top of that stack, and expelled into the air, state what, if any, appreciable effect it would exert on vegetation, crops or forest in or across the Georgia line?

A. Surely nothing, it is so diluted before it reaches there, suppose it all went that way, over the Georgia line, for it is taken up by dif-usion, it is mixed in going along until it is diluted to such an extent that it could not do any damage.

1173 Q. 36. Taking the top of the stack as the nucleus, and supposing this flower sulphur which you are talking about, was converted into sulphur dioxide, floating away over that territory, that immediate territory, and having a regard for the law of dif-usion of gases, would they be dif-used by the time they reached the Georgia line, would they all be dif-used?

A. I made the calculation this way, where we assumed the base of the tunnel was on the Georgia line, if you will notice the chimney of smoke begins to spread out, any chimney does so, the smoke will spread out this way and that way as it goes along, so after leaving the appex at the Ducktown plant and reaching the Georgia line, it would leave a space of two miles, a line two miles long and seven hundred feet high, I figured out there was,—assuming that

this is a cone, you know, the base two miles wide, and say about seven hundred feet high, this cone with an appex right at the plant, that holds so many cubic feet of air. Only, this is pure air, contained in a cone about two and one half miles long, the body of that cone has got to be moving according to the rate the wind is travelling, in other words, the average wind velocity is about two and one half miles an hour, that the two and one half miles does not quite move the entire body of the cone out of the way every hour, but figuring on that basis, it came down to about one part of S.O..-2, or sulphur dioxide, to about one and a half million times of air. Now, in the entire figure, you will find that that distance and the amount of that million and a half times of air, that that would be so diluted before it reaches the Georgia line, it is almost nil.

Q. 37. State whether or not the sulphur dioxide diluted to the extent it would be travelling that distance, under the prevailing conditions there, would exert any presentable effect on vegetation, crops or forestry, south of the Georgia line?

1174 A. No, sir, not three and one half miles distant.

Q. 38. Now, assume if you please, that there is being damage done down in the State of Georgia by the smelting operations and as a result of it eliminating sulphue dioxide, what would you say as to the cause, what is the source of that infection?

A. It must be,—one of the smelters must be the cause, one of the operations, that is, of sulphur dioxide.

Q. 39. Well, which would you say?

A. Well, if this one would not reach the line, of course the other, or nearer one, must be the one which is causing the damage, but I can probably show they do the damage. This company, they are making too much acid.

Mr. DRAKE: We except to the last part of the answer, because there is no facts stated on which to base an opinion.

Q. 40. Did you travel out southwardly, southeastwardly and southwestwardly from the Ducktown plant while there?

A. Yes, sir, we took a buggy ride while there.

Q. 41. Mr. Gilchrist, would you say from the operations as they are generally practiced there at Isabella, that the effects of the sulphur dioxide that is emitted from the Ducktown Company's plant would be carried onto the sides of the hill that faced the smelter, or onto the opposite side from the smelter?

A. Of course those facing the smelter very naturally, and that will avry according to which way the wind is blowing.

Q. 42. Now, state whether there is an intervening chain of hills between the Ducktown Company's smelter and the State of Georgia, or the line of the State of Georgia, at the nearest point, and extending eastwardly and westwardly between the smelter and the Georgia line?

A. Yes, very. The country seems to abound with hills.

1175 Q. 43. What would be the effect of those hills on the fumes that would be emitted, assuming that all the sulphur

that is unaccounted for in your consultation, is sent out in the form of sulphur dioxide?

A. Well, in striking a hill of creek, that assists in dif-using. You can strike against anything,—it carried it up and helps to difuse it, much more readily, and of course each hill top it strikes is so much resistance to it. Just like the wind, and it naturally follows anw water, any streams, it passes over, it deflects a little bit, until the current takes it up, and it is getting less and less all the time, besides what the air carries away in dif-usion.

Q. 44. What would you say of the conditions of the Ducktown Basin, since the acid plants have been installed by these two companies, and as the operations have been conducted during the past two or three years, as compared with what they were, before the building and installation of these plants; I mean to say, what is the change if any, in the forest, the appearance of the forest and the result- effect on the fields and gardens?

A. I would not like to say so much about the appearance of the forestry before the acid plants were built, because I passed there, I was not paying much attention and I did not notice that the country was denuded of vegetation, part of it, but I do notice this, wherever anything is planted it grows luxuriantly. The one or two gardens we visited, were magnificent. It was almost like an oasis in the desert.

Q. 45. How far were they from the plant of the Ducktown Copper Company?

A. Well, they were within a mile or a half mile, I will say, just the houses of the operatives.

Q. 46. After you left the plant for a mile or so travelling towards the Georgia line, or southeastwardly, what was the conditions?

1176 A. Well, after you got a certain distance you can see the gases coming out, but the soil is all taken off, that is the trouble about that country, the soil,—the plant life has been washed away, nothing to retain it in years gone by. But now the rock and stone is beginning to break up again and form new soil and gradually the plant life is propping back as it used to be.

Q. 47. After you passed the Georgia line, southeastwardly and southwestwardly from this plant, do you think the operations of the plant as conducted, would have any effect on the vegetation?

A. None at all.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 48. When was the first time you went up there at the instance of this company to make investigations?

A. Last September.

Q. 49. Last September?

A. Yes, sir.

Q. 50. What time?

A. I could not give the date exactly, sometime in September I may say, but I could not locate the date.

Q. 51. Was it the first or the last?
A. About the middle of the month.
Q. 52. How long did you stay up there at that time?
A. A couple of days.
Q. 53. That was when Dr. McCandless was with you?
A. Yes, sir.
Q. 54. How far down in Georgia did you go, I think you were in a buggy, I believe you say?
A. Oh, we just drove all around in and about, well I would say a couple of miles, three miles, something like that, and then we
1177 went down to Ducktown, and met the train, and I drove up from Ducktown to the plant in an automobile.
Q. 55. You go to Ducktown and then drive from there up to the Isabella plant?
A. We got off there and went up to Ducktown.
Q. 56. How far did you drive down towards Georgia from the Ducktown Copper Company, in that buggy trip you made?
A. I do not know. It seemed a long ways, I suppose it is only two or three miles.
Q. 57. Two or three miles?
A. I suppose.
Q. 58. And that is all the investigation you have ever made to the growing crops and vegetation, is it Doctor?
A. You mean with regard to that plant?
Q. 59. I mean, relative to that plant, you have not been there this year?
A. No, sir, no.
Q. 60. You made that trip with a view of giving an affidavit?
A. Yes, and the main thing was, I went to see about the working of the plant, really that was what I went especially for.
Q. 61. You went to investigate the workings of the plant and not as an expert on vegetation?
A. No.
Q. 62. You do not claim to be an expert on vegetation?
A. No, I have just got good sense.
Q. 63. And the conditions you examined, were purely local?
A. Yes, sir.
Q. 64. Now, you say you know smoke and the diffusion of gases, and can give us some illustration of how they would affect a community? Suppose you have given a basis, then how far would they be disseminated out into the air, if the air was perfectly still and no wind, would they not go in every direction?
1178 A. They would be dif-used with the atmosphere as far as they went, and they would travel out under those conditions in all directions, and keep widening out. I did not take any example like that, but I would take a chimney, but I would just take,——
Q. 55. I will ask you this question, Doctor, if the wind, if the velocity of the wind does not have a great deal to do with the carrying effect of these fumes?
A. Of course it does.
Q. 56. If the wind was blowing at a high velocity, it would carry

the fumes further before they were diluted, than it would if they were traveling very slowly, giving the gases time to cool and fall down to the ground, would it not?

A. You take smoke coming out of a stack and the wind at a high velocity, you get them mixed quicker, and it is diluted, the more wind you have, the quicker dilution you have, but when the fumes come out of the top of the stack they are hot.

Q. 57. And are they not much more adhesive at that time?

A. Yes, sir.

Q. 58. They stick together closer when hot?

A. Yes, sir.

Q. 59. And being hot, the wind picks them up and carries them on almost like a ball?

A. No, sir.

Q. 60. Like a stream of water pouring forth, and they are not so easily scattered?

A. Yes, you cannot, the law of nature is such that no two gases, the moment,—I do not care what they are, come in contact, you can put the heaviest on the bottom, and the lightest on top, and it will only be a short time when the heavier is mixed with the lighter, that is the great salvation in this day and generation, the towns are tak*ing* care of by the uniformity of the atmosphere over them.

1179 Q. 61. I want to ask you this question: you state whatever damage might be done in Georgia, it is your opinion, although you did not state any facts on which to base that opinion, that it was not done by the smelting operations of the Ducktown Copper Company? Why do you say that?

A. Well, going at that on the basis of seventeen tons of acid each day, each and every day,——

Q. 62. (Interrupting.) Answer that question first; that is your statement?

A. Yes, sir, I said that.

Q. 63. Now, let us suppose that in the month of May or part of the month of May and June of last year, that the Tennessee Copper Company was closed down entirely and did not smelt any ore or matte, or anything else for the space of fifteen to thirty days, during that time, all that country back in the Flat Creek country, east from Ellijay, or from Blue Ridge, and north from Blue Ridge, and all along in that north valley of the Tacoa river, was covered with sulphuric fumes, so much so, that the citizens could smell them, and they could see them, and that the leaves on the trees were parched, to what would you attribute that kind of damages?

A. It could not be the Ducktown people. I have explained that to you. I have contemplated the other conditions which you describe, and I have taken that into consideration, but I do not see how you could do that, how they could float that far away.

Q. 64. From what would you say those conditions would arise, you say that without question, those conditions could not have prevailed?

A. No, sir.

Q. 65. You do not know what kind of smoke they were belching forth there last May?

1180 A. No, sir, I do not.

Q. 66. You know they had two furnaces there, didn't they?

A. Yes, sir.

Q. 67. How many were they running when you were there?

A. One.

Q. 68. They sent for you to come?

A. Yes, sir.

Q. 69. How long before?

A. I do not know just when?

Q. 70. When you got there they were using only one furnace?

A. One furnace.

Q. 71. Did not you say they had two furnaces?

A. Yes, sir.

Q. 72. You do not know of your own knowledge how much ore they smelted that day, do you?

A. No.

Q. 73. All you know as to that is what their books show?

A. And the figures they gave me to go by.

Q. 74. How much sulphur dioxide will a pound of sulphur make?

A. Two pounds.

Q. 75. Just double always?

A. Yes, sir, it is double.

Q. 76. And according to their figures which were furnished you there, how much sulphur dioxide were they turning loose per day?

A. Seventeen tons would be thirty four, of course there are flowers of sulphur in that seventeen tons. I could not weigh them, could not get them.

Q. 77. Did you hear the figures given here by Mr. Lamoreaux, as to the amount of sulphur?

A. Yes, sir, I think I, did.

Q. 78. Do you know how much per cent it would be of the sulphur that they were discharging into the air from his

1181 figures, what per cent?

A. It is more than mine. Mine was twenty-two to twenty-three per cent.

Q. 69. His is more than yours?

A. I think so. I have not got the figures.

Q. 70. The day you were there, they were not smelting as much ore, as according to the whole record it shows?

A. No, sir.

Q. 71. You say your average was taken in the ninety-two days, as given you by them?

A. Yes, sir.

Q. 72. You got the figures from ninety-two days?

A. Ninety-two days.

Q. 73. And you were not there but two days?

A. Two days.

Q. 74. That is all you inspected there, was just in the two days?
A. That is all.
Q. 75. That is it, the duration of your observation was just two days?
A. Yes.
Q. 76. Just part of those?
A. I got there in the morning and stayed one night and left the next night.
Q. 77. Did you see their analysis books and records?
A. Yes, sir.
Q. 78. How often do they make them?
A. They make them a number of times a day, they have to.
Q. 79. How many times a day do they make these analysis?
A. I would not be able to say, though they take them different times a day, very frequently, for they could not take only one, because they may vary frequently during the day.
Q. 80. Is it not a fact that these ores vary considerable in sulphur?
1182 A. Oh, yes, they do to some extent, but you will be surprised to see how uniform they run day after day.
Q. 81. You do not know how much sulphur these ores contain?
A. I only know what they gave us.
Q. 82. You never analysed any of them?
A. No, sir.
Q. 83. You do not know anything about it then, only what they gave you?
A. No, sir.
Q. 84. They do not have any process by which to mix these ores uniformly, do they, that is, say the ores from one mine and the other?
A. No, it is this way, they put them all in, mix them in certain quantities, they have to analyse the ores frequently, it is a very quick process, can be done every eight minutes, and very very carefully.
Q. 85. They have not got what is considered the most modern methods for making ores, have they?
A. Yes, sir, they have for a smelting plant.
Q. 86. Have they got a mixing plant where they distribute the ores uniformly?
A. No, I do not think that is a modern plant.
Q. 87. You do not think it is a more modern process of mixing ores?
A. No, they put in the mixture, in making a certain percentage of each of the three classes of ore, they get a certain content of the three classes, and know the percentage, they would make any diffrent.
Q. 88. They would make how they mixed the ores?
A. No, sir, I do not think so.
Q. 89. You are an acid expert?
A. Yes, sir, supposed to be.

1183 Q. 90. In the making of acids, don't you know it is very important to your product, to have your ores uniform so as to know how to handle them?

A. In acid making they use some two or three different classes of ores in the same acid plant.

Q. 91. You have not answered my question.

A. As long as you know how much sulphur there is in the ore, it does not matter how much we put in.

Q. 92. Is it not a fact, that the more uniform in sulphur your ores are, the better results you can get?

A. Yes, I grant that, yes.

Q. 93. And is it not, very important, that they make their ores run uniformly in the smelter, if they want to get good results?

A. Yes, sir.

Q. 94. Then, would not it be more important to have a method to mix these very uniformly?

A. Well, it might, but when you put a charge in, and as long as you know what it is, it does not matter from what source you get it.

Q. 95. Doctor, don't you know if they were to dump in a load that contained ninety per cent sulphur and in thirty minutes dumped in a load that contained forty per cent sulphur, and would make such changes and variations, that they could not get good results?

A. No, they could not get good results in that manner.

Q. 96. It is better to mix your ores uniformly?

A. Yes, as long as you have some method of getting them uniform.

Redirect examination.

By W. B. MILLER, Esq.:

Q. 97. Trusting the company did not have any control over the men,—or over the formation of those ores originally, that was by a geological process?

1184 A. Yes, sir, but in a mine it is generally uniform, all in one part of the mine, and you get very little variation at one mine. It goes very uniformly.

Q. 98. And whether there is a difference of twenty per cent in the ores, or in the sulphur content, you can compute the sulphur dioxide that is eliminated, you can work it up in the acid plant, and recover it?

A. Certainly.

Q. 99. There seems to be a discrepancy, an apparent discrepancy, between the figures furnished by Mr. Lamoreaux and you and Dr. McCandlett, did you take into consideration only the ninety-two days' run, like you stated, after you heard Mr. Lamoreaux say on the stand, in the giving of his deposition that his figures were very liberal in favor of the State of Georgia?

A. I heard him say so.

Mr. DRAKE: We except to that question and answer as his answer is the best evidence of what he swore.

Exception overruled and appeal taken.

Q. 100. Did you or not, also hear him state that during the summer months, that is the months that would have immediately preceded the visit of yourself and Dr. McCandlett there, that the consumption of ores there was smaller than in the winter months?

A. Yes, sir.

Q. 101. Assuming that during the summer months, the yield of matte would be only about six elevenths of what it is in the winter months, would,—you were there in September, would or not that affect and largely explain the apparent discrepancies between the figures of yourself and Mr. Lamoreaux?

1185 A. Well, of course there is a good many ways of getting at those figures during that time, they make them run continuously, but when sulphur is taken off from the furnace, it goes to the acid plant, that is big enough to take care of it all, so, if they lose gas in the workings of the plant, it is natural for the smelter to do so, to lose a very slight amount.

Q. 102. Do I understand you to say that the smelting operations always result in a percentage of sulphur dioxide escaping?

A. Whenever they open the top of the furnaces to feed the ore in, you cannot help it getting out entirely, for in the meantime it will belch the gas out.

Q. 103. Is it possible to prevent that?

A. I do not think it is yet, but I think sometime we will get over that.

Q. 104. Was the illustration that you gave of the zone, in the distribution and dif-usion of sulphur dioxide, a fair illustration?

A. I think so, about as fair as I could get.

Q. 105. Did you or not, in making your computation, take into consideration the various affects that would be encountered with in the distribution of sulphur dioxide, being sent southwardly and southeastwardly towards the Georgia Territory?

A. It would not make any difference, in fact, we did not take into consideration the absorption by stream or anything like that.

Q. 106. You just assumed it would be carried as much as three miles?

A. Yes, sir.

Q. 107. That it would be carried to the Georgia line?

A. Yes, sir.

Q. 108. But as a matter of fact, would a lot of it be precipitated in a short distance from the plant?

A. Yes, sir.

1186 Q. 109. You are also assuming the entire body of it would be transported all the way to the Georgia line, and it would only be dif-used in the usual ratio at the time it reached there?

A. Yes, sir.

Recross-examination.

By J. A. DRAKE, Esq.:

Q. 110. About those ores, they *are* three kinds of ores, don't they?
A. Yes, sir, three kinds of ores.
Q. 111. They run different in sulphur?
A. Yes sir, sulphur content.
Q. 112. In mixing those three different kinds of ores, isn't it important that they use the same proportions at all times?
A. Yes sir, that is right.
Q. 113. In order to keep the sulphur right?
A. Yes, sir.
Q. 114. And if they do not have a good method of doing that, the amount of sulphur that is being released, would vary day by day, would it not?
A. Yes, sir.

Redirect-examination.

By W. B. MILLER, Esq.:

Q. 115. You were there and saw them as they smelted the ores, have you got any improvement to suggest on their manner of converting or handling those ores?
A. I do not think so, because that is right, you have got to block it off into the smelter like they do, but we do hope that we will have an improvement some day.

MR. DRAKE: We except to that as being irrelevant.
Exception overruled, and appeal taken.

Q. 116. Now, what would be the relative sulphur dioxide contents, say in cities like Cincinnati, Cleveland, Ohio, Columbus or Chicago, or Atlanta, as compared with the sulphur dioxide that would be found in the atmosphere, assuming that the smelting operations of this company were carried on normally, in connection with the acid plant, as has been described by Mr. Lamoreaux in your presence here to-day, after the sulphur dioxide reaches the Georgia line?
1187
A. It would be very similar, now take London, England, that is a densely crowded city, it has been ascertained by the government experts that for each square mile in the city of London, in the summertime, there is eighteen tons of sulphur in the coal, and in the winter it is forty-one tons per square mile.
Q. 117. Double that would be the sulphur dioxide?
A. Yes, sir.
Q. 118. Now, in Cleveland, where they have a great many manufacturing plants, there it is so strong, that you can knock the sulphur acid off of the leaves on the trees in the parks.
Q. 119. How do those territories compare, about in percentage of sulphur dioxide in the atmosphere, with the section of North Georgia, that lies southwardly and southeastwardly from Duck-

town, assuming the operations of the Ducktown Company were to continue as Mr. Lamoreaux has described them here to-day?

A. How do you mean?

Q. 120. I am trying to ascertain whether the operations as carried on at Ducktown, as Mr. Lamoreaux has described them, taking his figures, would send into Georgia, that territory immediately south and southeastwardly and southwestwardly of the Isabella plant, proportionately as much sulphur dioxide in the same place, as will be found in Cleveland, Chicago or other cities?

A. No, I do not think so.

Recross-examination.

By J. A. DRAKE, Esq.:

1187½ Q. 121. Is the timber all killed in London?

A. Oh, no, they have beautiful forests.

Q. 122. They have fine timber and fine forests?

A. Yes, sir.

Q. 123. How much area does London cover?

A. London proper is not a very large place.

Q. 124. Is not large relatively to the world?

A. A few gardens and a few houses,——

Q. 125. How many tons of sulphur dioxide would that sulphur make?

A. In the summertime it was eighteen, thirty-six tons of sulphur dioxide per square mile of territory, in the summertime.

Q. 126. According to the figure, and according to your own knowledge, is not that much sulphur dioxide in the air, if exposed any length of time to timber, and growing vegetation, absolute death?

A. Every tree in London would be killed is all I have got to say, if it were.

Q. 127. That much is beneficial for the forests, if they are so fine?

A. Of course, I won't say it is not beneficial, but there is no one who thinks it is a benefit. Of course too much is not a good thing.

Q. 128. Relatively speaking, how many units of sulphur dioxide to one of air, would there be in the city of London, according to the figures you have given?

A. That is pretty hard to say.

Q. 129. Would it be one of sulphur dioxide to one hundred thousands?

A. No, I would not think so.

Q. 130. Would it be one in two hundred thousand?

A. No, sir.

Q. 131. Would not there be more than one to three hundred thousand?

1188 A. No, I do not know just what it would be. Well, it would be considerable.

Q. 132. Does the presence of this sulphur dioxide in Cleveland and London do any damage?

A. My Uncle was president of the,——

Q. 133. (Interrupting.) You can explain after you answer. Does it damage vegetation in Cleveland and London?

A. No sir. My Uncle Peter Spence was president of the British Association and they tried to take that thing up, the government was trying to further the organization of an acid plant, and the British Association had experts to examine all the big towns, and they went to the forest, parks in London, Manchester, Birmingham, and other towns, and they saw the chemist wash off, actually wash off sulphuric acid off the leaves, which were perfectly healthy, and there was no injury to them.

Mr. DRAKE: We except to all that explanation, as being uncalled for in the answer, and being irrelevant and immaterial.

Exception overruled and appeal taken.

Further deponent saith not.

Sworn to before me this 20th day of June, A. D., 1914.

_____,
Clerk and Master.

1189 J. M. MCCANDLESS, the next witness called, being first duly sworn, upon examination, deposed:

Direct examination.

By W. B. MILLER, Esq.:

Q. 1. Dr. McCandless, what is your age?

A. Fifty-five.

Q. 2. Where do you live?

A. Atlanta.

Q. 3. What is your business or profession?

A. Chemist, *anyletical* chemist.

Q. 4. What experience by years have you had?

A. I have been a chemist nearly thirty years.

Q. 5. Have you held any official position in connection with the state of Georgia?

A. Yes, sir, state chemist of Georgia for about ten years.

Q. 6. When did your official tenure cease?

A. 1907, I think it was, the latter part of 1907.

Q. 7. And as the representative of the state of Georgia, did you take occasion to visit the Ducktown section in Tennessee and territory known as the Ducktown Basin?

A. Yes, sir, I was a member of the first commission which was appointed to visit that section in 1903. And I was also a member of the United States Commission, appointed in 1905 and since that time, I have been sent by the attorney general of Georgia up into that region on two occasions, 1908 and 1910.

Q. 8. By what authority were the two first commissions performed?

A. By authority of the legislature.

Q. 9. Of Georgia?

A. Yes sir.

1190 Q. 10. Then you were familiar with the conditions existing there before the acid plants were built?

A. Yes, sir. On our first visit, they were burning with the open roast heaps. And then the whole territory was covered with a fog of sulphuric acid, so that it was a punishment for us to go there, the air was so full of sulphuric dioxide, that the tears would run from your eyes.

Q. 11. What opportunities did you have to observe the forests and crops, and the gardens located along the Tennessee line and below there, in Fannin County, Georgia, southwardly, southeastwardly and southwestwardly from Copper Hill?

A. We drove through the country and observed the conditions as we passed along, and unquestionably there had been great damage done by the gases which had been carried by the wind, and further down into the ridges and foothills in Georgia.

Q. 12. The Tennessee Copper Company's plant has always been located some two or three miles nearer the Georgia line than the others?

A. Yes, sir.

Q. 13. Since 1906, has it had in operation that present tall stack?

A. I think so, yes.

Q. 14. What was the effect of putting that stack in operation, as to the sulphur dioxide, the area affected by it?

A. It extended the area, but relieved the condition in the immediate vicinity of the stack, because the gases were carried over and beyond, and they would come down towards the earth at a further distance out, therefore they extended the area of damage.

Q. 15. You visited the section repeatedly, I believe you say. I will ask you if you remarked any change in conditions in North Georgia and Fannin County, after the two copper companies built and equipped their present acid plants and put them into operation?

1191 A. Yes, sir, it seems to me that there was a marked improvement in the conditions. The first time I noticed was when the attorney general sent me up here in April, 1908. I think I drove through the country from Blue Ridge at that time, and observed the situation, and vegetation, and asked questions from residents and farmers along the road, et cetera, and my report to him was that there seemed to be marked improvement.

Q. 16. When the Ducktown Company put its plant into operation in 1909, was there much change in the conditions of the territory that was effected by the operations of its plant?

A. It would be impossible for me to have told whether it was due to that or not, because there are, and always have been a great excess of sulphur gases generated, which were not taken care of, and it would be impossible to say whether it would be due to the Ducktown plant or not, but it is reasonable to conceive that when they began to take care of the sulphur contents of the gases, there would be some improvement.

Q. 17. Was the Tennessee Company's acid plant at the outset as large as it is not?

A. No, sir.

Q. 18. Do you recall whether or not about two years ago, they very much enlarged their plant?

A. So I understood.

Q. 19. Have you been through that North Georgia section right recently, since you have been up to Ducktown on your visit?

A. Well, I was there last September, on the visit with Mr. Gilchrist which he has been describing. At that time we did not drive through the country as I had previously. We got off the train at Ducktown and drove over through the country. It has been denuded of vegetation.

Q. 20. What did you find in that territory, which had been previously denuded of vegetation?

A. Well, there were evidences of gardens being planted in the vicinity of Ducktown plant, and we noticed along the roads, a mile or a mile and a half around the plant where the residents had
1192 made any efforts to raise gardens or fruit, they were awarded with success, even luxuriant growth of vines and grasses on the ridge where we spent the night. It was covered with a heavy growth of grass, and as Mr. Gilchrist stated here on the stand, the wind that night blew the gases towards the house we were sleeping in, and right over that ridge, and evidently there was not sufficient to destroy the grass on that ridge.

Q. 21. You are familiar with the effects of course, of sulphur dioxide on vegetation, you know what that is?

A. Yes, sir, it is destruction.

Q. 22. And you have studied especially with respect to that section of the country, that is the North Georgia section?

A. Yes, sir.

Q. 23. And you are also familiar wtih the operations as conducted normally at the plant of the Ducktown Copper Company?

A. I have known in a general way, I have been there on two occasions, last September I was informed more particularly in regard to the operations.

Q. 24. What do you say as to the possibility or probability of, rather, of the operations of the Ducktown Copper Company, as normally carried on, exerting any harmful effects on the forests and gardens in Fannin County, Georgia?

A. I think it is an impossiblity, absolutely impossible for it to have any effect.

Mr. DRAKE: We object to that for the reason that I think that answer would answer every issue in this lawsuit, and it does not state the facts sufficiently to justify the opinion.

Exception overruled and appeal taken.

Q. 25. Now, please, sir, state the reasons for your last answer, and state them in detail in your own way?

A. Well, the reasons have already been stated by Mr. Gilchrist, in his testimony here on the stand, when we made our visit,
1193 the general manager, Mr. Renwick opened his books, and as Mr. Gilchrist stated, we got the number of tons of ore smelted every day, we had the analysis of ore, and we calculated from the

analysis of that ore, the amount of sulphur that was charged into the furnace. We then got from the books the amount of sulphuric acid produced from that sulphur, the amount of sulphur left in the matte, and in the slag, and in the flue dust, and various places like that where it did not pass into the air, and calculated all of that sulphur into the amount of sulphur dioxide which would be emitted in the course of one day from the plant, and deducted from the total sulphur charge. And in that way, we found that the company was recovering about seventy-five or eighty per cent of its sulphur and something like twenty-two or twenty-three per cent was being lost. And my recollection of the figures is that there was a total of thirty-two thousand pounds of sulphur, figuring it in a liberal way, making the company bear the burden of certain things that we were not sure of, there were thirty-two thousand pounds of sulphur, equivalent to sixty-four thousand pounds of sulphur dioxide, liberated into the air, and then, we made our calculations on that assumption, which was of course, unfair to the company, that the wind would always come from the north and northwest and blow over all of that sulphur dioxide. We assumed the apex of the furnace, the top of the furnace, the apex of the cone and the base being five miles along the Georgia line and being the basis that we would figure on, and applying our figures to that, there would be something like fifty billion of cubic feet of gas, we calculated on that fifty billion — of gas that would be sent into the state, and there would be a combination of the sulphur dioxide with air in the proportion of about one part to three and one half million parts of air, and that is a greater proportion than has ever been claimed to be injurious. I think that the
1194 experts all claim that as little as one part in one million is injurious. That, I believe is where it is continued for any length of time, not one application.

Q. 26. You say your calculations assume that the entire sulphur dioxide would be transmitted down into Georgia?

A. Yes, sir, our calculations assume that the entire amount would be transmited into Georgia, and taking no account whatever of what would be absorbed by stream, soil and trees, in our estimate, or anything that would deflect it upward into the air, which naturally would be probable where the greater part of it would most likely have been diffused and carried upward, and latterly, and into various other territories, but we assume that it was confined in this figure, and carried in the directions of the State of Georgia.

Q. 27. You knew that would be violent to the Ducktown Company, as a matter of fact?

A. Certainly.

Q. 28. How would the sulphur dioxide content in the territory that is affected, compare with what it would be in cities, say like Chattanooga and Atlanta?

A. In the summertime, only in our report, we made a comparison of the city of Atlanta. The city of Atlanta burns something like about a half million tons of coal per annum, and we figured on three hundred thousand tons, being the actual consumption of Atlanta,

would show practically the same amount as turned loose at Ducktown, about sixteen tons.

Mr. Drake: I except to that as irrelevant.
Exception overruled and appeal taken.

Q. 29. How much sulphur content in the atmosphere would be south of the Georgia line,—it would not be great- than it is in Atlanta?

A. No, sir.

Q. 30. You spoke of the books having been submitted to you, I will get you to state if they appear to be regular and accurately
1195 kept in the ordinary course of business?

A. Yes, sir.

Q. 31. On the occasion of your visit to this Company's office, as a representative of the State of Georgia, in any capacity, I will ask you if there was the slightest hesitation to give you the information for which you asked, or any disposition on their part to conceal anything?

A. No, sir, no, sir.

Q. 32. All means of information were offered you and your parties?

A. Yes, sir.

Cross-examination.

By J. A. Drake, Esq.:

Q. 33. Is it not a fact, that atmospheric conditions have a great deal to do with the diffusion of sulphuric acid gases?

A. Yes, sir, they have.

Q. 34. I will ask you if at times these gases do not come out of the top of these stacks, and go off miles apparently without dropping, just a continual stream, is that not a fact, and have you not observed that?

A. I have observed that particularly from the top of the Tennessee stack where it goes out of that high 325 foot stack, and you can see the clouds of gas passing along. I would like to say however, that in regard to the Ducktown stack, it is down below that level, in a low place, and the gases as they come towards the state of Georgia, naturally strike the top of the hills, and pass along the creek, and they are pretty nearly all diffused, which is not the case with the Tennessee stack, it is so high.

Q. 35. And is it not a fact, Doctor, that the Ducktown Company's plant is on higher ground than the Tennessee Company's plant?

A. No, sir, I think it is on lower ground.

Q. 36. I mean with reference to sea level?

1196 A. I do not think it is.

Q. 37. And if it is on higher ground, then you do not understand the local conditions there, do you?

A. The Ducktown plant is down in a basin, and the hills around it are all going upward towards the Georgia line, or higher.

Q. 38. And the hills on which the Tennessee plant is, are higher, is that your observation?

A. That is my idea, that the hills down nearer the Tennessee plant are higher than the Ducktown plant.

Q. 39. If the government survey, the government geod-ic survey shows that this Ducktown plant is on higher ground by 150 or more feet, why you would take that to be the fact, would you not?

A. Yes, sir.

Q. 40. And the hills around the Ducktown plant are also lower, are they not, relatively, and the hollows that drop off from them, go down close to the river, or little points or -nolls that mount up are lower?

A. Well, I drove over this and they are higher than the Ducktown plant. That is the plant I am getting at, the local conformation of the ground, the hills around the Ducktown plant are up above it and therefore the gases strike the top and sides of these hills, and are obliged to crawl over.

Q. 41. You mean that is the way it appears to you from your observation, you do not mean that you made any survey, or assisted to make a survey to see which plant was on the higher ground?

A. No, sir.

Q. 42. Now, have you looked at the government map to ascertain the elevation?

A. No, sir.

Q. 43. If it is a fact that the Tennessee Copper Company's plant is at an elevation of fifteen hundred and sixty feet, and the place of the Ducktown plant is at an elevation of sixteen hundred and
1197 twenty feet, then the Ducktown company would be on higher altitude, would it not?

A. It would be on a higher altitude, yes.

Q. 44. There would not be so much elevation between the top of the two stacks as would appear just from looking at them?

A. No, but even then there is 325 feet of stack which has to be added to the heighth of the ground that it stands on.

Q. 45. But that would make it something like,—the Ducktown Company's stack is seventy feet high and the other three hundred and twenty-five feet high, and taking its elevation which I have given you, the Tennessee stack, the top of it, would not be more than 170 or ninety feet higher than the other?

A. No.

Q. 46. Now, Doctor, there is no vegetation or trees of any kind on those hills between the Ducktown Company and the Georgia State line, are there?

A. No, sir, no.

Q. 47. I will ask you if timber or any other kind of vegetation on those hills, would not have a tendency to dif-use or stop the fumes if they were to come in contact with them?

A. Yes, it would have that tendency of course. The timber has all been robbed from those hills, between the Ducktown Company and the State line.

Q. 48. And the only investigation I believe you say you made last

year was in September, at the time you and Dr. Gilchrist was there, was it?

A. Yes, sir.

Q. 49. Do you remember the date of the visit?

A. About the middle of September, about the 13th, I think it was.

Q. 50. Have you been there this year?

A. No, sir, I have not been there since.

1198 Redirect examination.

By W. B. MILLER, Esq.:

Q. 51. Is vegetation returning on those hills near the Georgia line?

A. I have not been there since 1910.

Q. 52. You are not able to say?

A. No, sir.

Q. 53. What direction are those houses in which you spent the night from the Ducktown Company's plant, when there in September?

A. I think likely northwardly, and I judge about a quarter of a mile from the plant.

Q. 54. Facing the plant?

A. Yes, sir, about in line with it.

Further this deponent saith not.

——— ———.

Sworn to before me this 20th day of June, A. D., 1914.

——— ———,
Clerk and Master.

1199 STATE OF TENNESSEE,
County of Hamilton:

I, Chas. M. Fain, Notary Public, in and for said state and county, and stenographer, certify that the foregoing transcript is a true and correct, and honest transcript to the best of my skill and ability of my notes taken in shorthand.

This June 28th, 1914.

(Signed) CHAS. M. FAIN. [SEAL.]

Original. In Equity.

1200 No. 1.

THE STATE OF GEORGIA, Pl't'f,
vs.
THE TENNESSEE COPPER COMPANY and THE DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LTD., D'f'ts.

The depositions of W. F. Naughan and others, taken on behalf of the defendants, the Ducktown Sulphur, Copper and Iron Company, Ltd., commencing Thursday, June 18th, 1914, in the city of Chattanooga, Tennessee, pursuant to a notice hereto attached, in the presence of J. A. Drake and Lamar Hill, representing the State of Georgia, and J. A. Fowler, George G. Hyatt, and W. B. Miller, Esqs., representing the defendants.

1201 The hour growing late, and it being more convenient for all parties concerned, an adjournment was taken in the hearing of depositions in this cause until Monday, June 22nd, 1914, at Knoxville, Tennessee, in the Federal Building.

Pursuant to adjournment, the further taking of depositions in this cause was resumed at ten o'clock A. M., on Monday, June 22nd, 1914, at Knoxville, in the Federal Building, the witnesses being sworn by the Deputy United States District Court Clerk.

1202 CONNIE MARTIN HAENSLAER, the next witness called, being first duly sworn, upon direct examination testified as follows:

Direct examination.

Questions by J. A. FOWLER, Esq.:

Q. What is your age, Mr. Haensler?
A. Twenty-five years past.
Q. Where do you now live?
A. Knoxville, Tennessee.
Q. What is your business?
A. I am in the University of Tennessee, a student. I have been for the past year. I am now assistant to Prof. Bain.
Q. In what class are you in the University?
A. I have just graduated.
Q. That is, you were a junior during the previous year?
A. Yes, sir.
Q. You are Professor Bain's assistant?
A. Yes, sir. Well, not assistant in college work, but assistant in the experiment station work, that is separate.
Q. State whether or not you recently made a visit to the locality surrounding Ducktown?
A. I did.

Q. At whose instance did you make that visit? I say at whose instance did you go there; who got you to go there?

A. Prof. Bain.

Q. When was it you went there?

A. I went down on the 16th of June, and on the 17th I collected the specimens in this country, and on the 18th I came back.

Q. You mean the 16th, 17th and 18th of June, this month?

A. Yes, sir, the present month.

1203 Q. Where did you go?

A. I got off at Ducktown and then went to Copperhill.

Q. Did you stay there all night of the day you got there and the next day?

A. On June the 17th I started out of Copperhill on foot, and walked from Copperhill through to Mineral Bluff, and on that trip is where I got the specimens, after which I came back to Knoxville.

Q. Did you get the specimens along the road from Copperhill to Mineral Bluff?

A. Right along the river, I followed the river and the creeks, not along the road.

Q. Which river?

A. The Tococoa River and the Wolf Creek, and Hothouse Creek.

Q. How far did you go up Wolf Creek?

A. I could not state the mileage, I can show you on the map. I crossed this valley, here is a ferry, and the bridge crosses here, and here is a point with red letters 1498 on the map.

Q. And then, how far did you go beyond that?

A. Then, I went to a farm up here, I suppose it must be about this direction. I did not pass the farm, it was on the south of the river going up, and then it must have been about this point was a clearing, that I did not go beyond the farm on the creek.

Q. Now, did you collect any specimens along on Wolk Creek?

A. Yes, sir.

Q. Yes, sir.

Q. How many?

A. Twenty-four.

Q. What kind of specimens were they?

A. They were different kinds, some pines, some oaks, some rhododendrons, commonly called tulip popular.

1204 Q. Now, were those specimens scattered all the way from Wolf Creek, as far as you went?

A. Yes, there was one section after I got started that I did not get any in, that was between the mouth of the creek and a little ways up, I did not get any specimens along there.

Q. Why did you not get any specimens along there?

A. There was a clearning and a farm that I went through, and I went through the field.

Q. Then, did you, or not, get specimens wherever timber was growing along.

A. I did, at intervals.

Q. Had you, or not, gotten up into the hills when you turned back?

Q. Have you the other specimens with you, or are they in the possession of Prof. Bain?

A. I cannot say, I have two others here.

Q. Will you please have the other ones gathered by yourself, which you have present here, marked as Exhibit No. two to your deposition?

A. I will do so.

Q. Where did you get these two specimens?

A. I only got one of these, this pine No. forty. Specimen number forty is from the bank of Hothouse Creek.

Q. How far up the Creek?

A. At the first point of the creek, there is a bend almost a horseshoe bend.

Q. Did you make any observations as you went along as to whether or not there was any smoke damage?

A. No more than a casual observation. I was rushed to get through with that section.

1208 Q. You were not sent there for that purpose, of taking observations?

A. No, sir.

Q. Are you familiar with smoke damage?

A. Well, I have been on one other trip before, otherwise I have had no experience with it.

Q. Did you see any evidence of smoke damage at any time on this trip?

A. I did.

Mr. DRAKE: I except to that, because the witness has had no experience, and cannot qualify as an expert.

Exception overruled, appeal taken.

A. (Continuing:) I started from Copperhill where the hills are bare.

Q. What I wanted to know about, was while going up those rivers and those creeks, and looking at the foliage up there, was there any apparent damage done to the foliage this year?

A. There was one place where the leaves were scorched for some reason, but for what reason I do not know.

Q. Where was that?

A. I could not make a definite statement of that, because I did not have instructions to take notice of that kind of injury, and I did not take any. I could not recall definitely enough about it, to make a statement.

Cross-examination.

Questions by J. A. DRAKE, Esq.:

Q. As I understand you, Professer, you were sent out only to obtain some wood samples?

A. Yes, sir.

Q. And not to hunt for smoke damage?

A. No, sir.

If you were hunting for smoke damage, you would have found a good deal more, don't you suppose?

A. I do not know that I could recognize it, if I should see it.

If you had been sent out especially to hunt smoke damage, would have been very apt to have found it?

I do not know that I would, because I took any three that came y reach, without especially noticing the looks, along the creek, took samples and kept them.

As I understand, these specimens were gotten by a boring ma-e, which bored in and took out a core?

Yes, sir.

And you bored into a tree to get them?

Yes, sir.

Into the tree about how deep did you bore?

You could go about three or four inches, and then you would Into pine,——

(Interrupting.) You would go further into soft wood?

Yes, sir, about seven inches.

That poplar you were talking about getting a sample of, I ask you if in common terms that is not a shade poplar, that we n this country in yards for a shade tree?

It is used as a shade tree to some extent.

Is it not the old-fashioned poplar?

It is not what I think the yellow poplar is.

Do you know what that yellow poplar is?

I think I know.

Is it not the yellow poplar?

It is not the yellow poplar.

Are you an entomologist? Is that your special course?

No, sir.

You are just——

(Interrupting.) An agricultural student.

Q. An agriculturist, that is your special line?

A. Yes, sir.

Q. All the way you can identify any of these specimens put in here is by referring to your note book?

Yes, sir.

You cannot, independent of your notes, tell a thing about , can you?

I would know they were my specimens, that is all. I would know where I collected them.

Look at this specimen you have here?

I beg your pardon, I could tell approximately the region, be-e I numbered them in consecutive numbers.

What is the number of this specimen I hand you now?

That is not my specimen.

Answer me, what is the number of that, I want you to identify

That is Number 222.

Q. What kind of wood is that?
A. I would not be able to state, I would not want to say.
Q. Will you please file that as Exhibit No. 3 to your deposition?
A. I do so.
Q. And who got that specimen, Professor, if you know?
A. I was not there, I suppose Prof. Bain did.
Q. Something is very seriously wrong with that, isn't there?
A. I do not know what you mean by "wrong."
Q. I mean is it in a healthy, normal condition for wood of that kind?
A. I do not know that I would be qualified to state as to the health of the tree.
Q. What was the purpose, was not that the purpose, Professor, of your getting these samples?
A. I beg your pardon, I am not a Professor, I am a student.
1211 Q. I thought you said you graduated.
A. I did graduate.
Q. What was the purpose of your getting these samples, to show the normal healthy growth of timber, or otherwise? And showing the markings of its growth?
A. It was to show the growth of the timber.
Q. And the growth of that wood shows whether or not it was diseased or abnormal, would it not?
A. It should do it.

At the witness' request, he was allowed to make the following correction:

The correction is, that I made the statement that I finished marking the specimens the following morning. I remember now distinctly that I finished them that night because I had intended to finish the next morning, and Prof. Bain got a phone message that he must be in Chattanooga the following morning instead of the afternoon, and I finished them that night.

Further this deponent saith not.

——— ———.

Sworn to before me, this 22nd day of June, A. D., 1914.

——— ———,
Deputy Clerk U. S. Dist. Court.

The total distance traveled by this witness from his home to the point of giving his deposition, and return, was — miles.

1212 W. T. S. DICKEY, the next witness called, for further examination, deposed:

Direct examination.

By J. A. FOWLER, Esq.:

Q. 1. State, Mr. Dickey, whether since your examination at Chattanooga, you have gone over another section of North Georgia?
A. Yes, sir, I was out over a section of the country.

Q. 2. Please describe what section you have gone over since that time?

A. We went out from Blue Ridge, out up the river to the Flat Creek country, a place out there known as the Flat Creek country.

Q. 3. Now, what stream does that creek empty into?

A. Into Tococoa, or Okoee, they call it up in Tennessee.

Q. 4. About how far above the state line?

A. As the road runs it must be some twenty miles, I should say eighteen or twenty miles, perhaps twenty miles.

Q. 5. How far is it on an air line?

A. Possibly not over twelve or fourteen miles, fifteen miles possibly, I could not tell just exactly.

Q. 6. In what direction does Flat Creek run from its source to its mouth in the river?

A. It runs north.

Q. 7. Is it not East?

A. A north-east course, perhaps, likely it is a north east course.

Q. 8. How far did you go up Flat creek?

A. I went up Flat Creek up to within a mile and a half of the head of the creek, and where is two prongs of it, and we came out of that one and went up on the other prong up toward the head of it.

Q. 9. How many miles did you cover?

1213 A. How many miles?

Q. 10. Going up the creek?

A. Going up the creek, I should say the two directions we went we covered, I did, individually, I was not right well, and I did not go as far as some of the other parties did, up there, understand, but I suppose I went three or four miles on the two prongs of the creek, perhaps four miles.

Q. 11. State whether or not you made a careful observation of the timber and the vegetation as you went along?

A. Yes, sir.

Q. 12. For what purpose did you go up that creek?

A. I went up there to see about the timber.

Q. 13. Who was in the party?

A. Myself, and Mr. Quintrell, Mr. Bob and G. P. Dickey, the four of us.

Q. 14. When was it you went up there?

A. Sunday afternoon.

Q. 15. I wish you would state, Mr. Dickey, in what condition you found the timber and vegetation in general?

A. Well, sir, it seemed to be in a very flourishing condition up there, fresh, that is I thought it was, as I ever noticed on Flat Creek. I used to be in the timber business there in 1906, and the foliage is perhaps, appears to me to be more vigorous than in 1906 and 1907. You could see signs of smoke then, and I did not see any sign of smoke on this trip.

Q. 16. What was the extent of signs of smoke in 1906, and '7?

A. You could see quite a good deal of it on the leaves there. There is some tall mountains up there covered with chestnut timber, a lot

of foliage you could see away up toward the top of the mountains strips of dead leaves, extending may be for a half of a mile along the ridge. I remember visits when I was up there in 1906 and '7, you could see them somewhere along there.

1214 Q. 17. You say you were in the timber business at that time?

A. Yes, sir.

Q. 18. You mean you were buying and selling timber lands?

A. No, sir, we were shipping chestnut cord wood, and cross-ties out of the section, floating them down the *Toccoa* River, floating them down to Mineral Bluff and taking them out at a boom, working for a Boston Company.

Q. 19. Did you sell any land in there at that time?

A. How?

Q. 20. Where were your lands located then?

A. Well there was a lot adjoining Mr. Shippen's lands in which he and his brother were interested up there I think at that time.

Q. 21. Where was that land situated with reference to Flat Creek?

A. It was on the lower part of Flat Creek, come right down to the river and extended a half mile, as the lot of land does, up the creek. The creek runs about through the middle of the lot of land.

Q. 22. You say that was adjoining Mr. Shippen's land?

A. Yes, sir, adjoining Mr. Shippen's land.

Q. 23. In what direction was that from Mr. Shippen's land?

A. It was south of Mr. Shippen's land.

Q. 24. How much was there of the tract you sold?

A. 160 acres.

Q. 25. You say at that time you noticed considerable evidences of smoke damage?

A. Yes, sir, in 1906, and 1907, you could see, I do not know to what extent it injured the timber at that time, you could see it on the leaves.

Q. 26. Was there any dead timber resulting from it, or apparently resulting from it?

1215 A. Not that I remember sir, I could not state about that, because it has been some time ago, I just noticed the evidence of it on the foliage in 1906.

Q. 27. When you were there two or three days ago, did you notice any evidence of smoke damage during the present year?

A. I could not see any damage during the present year whatever.

Q. 28. Were you on Flat Creek last year?

A. Last year?

Q. 29. Yes.

A. No, sir, I was not on Flat Creek last year.

Q. 30. Were you there the year before?

A. No, sir, I have not been over in there for three or four years until the other day.

Q. 31. On the trip the other day, did the gardens and vegetation look good on Flat Creek?

A. They had nice gardens, and a lot of fruit, we remarked about the fruit being in better condition up there than in our section of the

country. The trees loaded with fruit, some of them bending under the fruit.

Q. 32. How did the corn look?

A. Looked all right.

Q. 33. Did you see any oat fields?

A. Yes, sir, we saw oat fields down the mountain this side of Flat Creek, I suppose a mile across the mountain, or something like that. I saw as fine a piece of oats as I have seen anywhere except in South Georgia, I was out where they were cutting oats, it was as fine a piece of oats as I saw in South Georgia.

Q. 34. Do you not know, except from hear-say what kind of mast they had in there last year?

A. No, sir. I was not in there last year. This year the chestnuts are just in bloom now, and the prospects are fine for a good mast, the chestnuts this year, up to this time the whole mountain sides, the chestnuts are in bloom and we were talking of the pos-
1216 sibility of a heavy mast——

Mr. DRANKE: We except to that as being hearsay.

Exception overruled and appeal taken.

Q. 35. Does the chestnut timber appear to be in a healthy condition through that section?

A. Yes, sir, all the timber up there seems to be in vigorous growth, and the foliage on it is very dense and heavy.

Cross-examination.

By J. A. DRANKE, Esq.:

Q. 36. Who was with you on this trim the other day, Mr. Dickey?

A. Mr. Quintrell, Mr. Baugh, Mr. Dickey and myself.

Q. 37. Mr. Quintrell is a witness that testified at Chattanooga, didn't he, the other day?

A. I do not know, sir, whether he testified or not.

Q. 38. Was he not down there the other day when we were all down there?

A. Yes, sir.

Q. 39. He is the man that lives on No. 20 mine, down there in Georgia, don't he?

A. I could not tell you just where he lives.

Q. 40. Were you and Mr. Quintrell here in the employ of this Copper Company, are you not?

A. I am not, no, sir.

Q. 41. Did you just volunteer your services and go and make that fifteen or twenty mile trip?

A. Yes, sir.

Q. 42. They did not pay you to?

A. They did not.

Q. 43. You are very much in sympathy with them?

A. I am very much interested in the Tennessee Copper
1217 Company, and the Ducktown Copper Company, both, sir.

Q. 44. You are interested in them?

A. In that where I own property up there, I am interested in that way.

Q. 45. And for that reason you volunteered to go and get this evidence to help them out?

A. Yes, sir; I volunteered.

Q. 46. You saw plenty of smoke damage in Georgia, didn't you?

A. No, sir, I did not.

Q. 47. At any point in Georgia?

A. No, sir.

Q. 48. You could not see any smoke damages anywhere?

A. I have not seen any this year.

Q. 49. You have not seen any smoke damages this year?

A. No, sir.

Q. 50. If there was any you could see it on that trip?

A. Why I could likely see it, yes, some more or less, for I was out looking for those things, if there was any smoke damage I did not observe it.

Q. 51. In fact, you just went along the road, didn't you, were you on a horse or in a buggy.

A. No, sir, an automobile.

Q. 52. Then you stayed in the big road?

A. We stayed in the big road until we got out of the automobile and walked around in the woods.

Q. 53. If you had been looking for smoke damage, you would have gone up on the sides of the mountains.

A. Yes, sir, we did go up on the side of the mountains, I did not go up as high as some of the other parties.

Q. 54. Is it not a fact, you went down there to hunt for the absence of smoke, more than to find any?

A. No, sir. We went to see if we could find any.

Q. 55. Who was your conductor and guide as to the points at which you would get out of the automobile and go up on the
1218 mountains and hills?

A. I do not really know that we stopped until we got up to those two prongs of the creek, you can go up one prong of the creek on the road, and you will have to get out of the automobile and go up the other. When we got to the place to go up the left hand prong, every body knew that we had to go, I do not know that we had any particular guide.

Q. 56. Did you say all who went in the crowd?

A. The four parties I have mentioned, awhile ago, John Quintrell, Mr. Baugh, and G. P. Dickey.

Q. 57. How many times did you get out of the automobile?

A. How many times did we get out of the automobile?

Q. 58. Yes.

A. I do not know, we were out of the automobile two or three times while up there. We left the automobile and took up the left hand prong of the creek, I did not go to the head.

Q. 59. Leaving Copperhill,—that is where you started from?

A. No, sir.

Q. 60. Where did you start from?

A. Mineral Bluff.

Q. 61. Leaving Mineral Bluff, which way did you go?

A. Over to Blue Iidge.

Q. 62. They you did not go through that country between Blue Ridge and Copperhill on this trip at all, did you?

A. No, sir. We did not go through on this particular trip, no.

Q. 63. How long since you have been through that section of Fannin County?

A. Yesterday on the train. I have not been through it any other way for some time.

Q. 64. If you were wanting to find some smoke damage in there would not the best place to find it be down there closer to these Companies, down within a few miles say of the State line?

1219 A. I should think that would be natural, yes.

Q. 65. And is not there thousands and millions of timber killed through that country from some cause?

A. There is dead timber in there, yes, sir.

Q. 66. It is not a normal forest is it, anywhere north of Blue Ridge?

A. It seems to me we had some pretty normal forests on the Flat Creek Country when we got to the head there is as nice a forest out there, the timber has been cut out of our part of the country largely.

Q. 67. I am asking about the country north from Blue Ridge, coming from there toward the Copper Companies, is that normal forest?

A. No, sir, it is not.

Q. 68. I will ask you if the ratio of dead timber does not increase very noticeably as you approach these copper companies?

A. You have been up there, I suppose at the Copper Companies, then you pass down the road, there is no timber at all for miles around the Copper Company, anybody knows that, for miles, that is unless it is small growth, growed up in late years, there is some of that for some miles around there.

Q. 69. Was any employee of the Company with you Sunday?

A. Not that I know of.

Q. 70. Mineral Bluff is how far from these Companies?

A. About ten miles.

Q. 71. Then in going from there, Mineral Bluff, why did you go in an opposite direction from the Companies, or is Flat Creek toward them?

A. It is in the opposite direction from the Companies South east.

Q. 72. You went on east then?

A. Yes, southeast.

Q. 73. And the nearest point you were to the Companies on

1220 that day was when you started from your home?

A. Yes, sir.

Q. 74. I do not remember whether you stated the other day, I will ask you again, if you have seen or smelt any smoke over there this year?

A. At Mineral Bluff?

Q. 75. Yes?

A. Yes, I have seen smoke, on one or two days, I could detect the odor of the smoke this year.

Q. 76. Well, who suggested to you and your party to make this automobile trip of investigation on Sunday?

A. Mr. Quintrell came to my house and asked me to go with him.

Q. 77. You testified down at Chattanooga, and then you went home and went out to make these private inspections on your own initiative, of that of Mr. Quintrell, I believe?

A. Yes, sir, I went with Mr. Quintrell on this last trip, he came and asked me to go with him.

Q. 78. And Mr. Quintrell is in charge of Mine No. 20, down there?

A. I could not tell you about that.

Q. 79. And he is an employee of the copper companies?

A. If he is, I do not know it.

Q. 80. And has he not for years been making his living off of copper companies, and does he not make it that way now?

A. I do not know sir, how he makes his living. I think Judge Howe has him employed, I have been told so at least to look after some property he has over in Georgia.

Q. 81. And Judge Howe owns that Copper mine, No. 20?

A. I have heard so, yes, sir, that he owned some property over there, I do not know what it is.

Q. 82. And you were sworn and testified in Chattanooga,
1221 and did you not stay in the Court room afterwards and hear a number of the witnesses testify after they got through with you?

A. Yes, I heard some of the witnesses, I believe, I am pretty sure I was in there.

Q. 83.

Mr. DRAKE: We want to except to all of the evidence introduced this morning, because he was under the rule and did not observe it, therefore, I think that his evidence is incompetent.

Exception overruled and appeal taken.

Q. 83. And is it not a fact that you stayed in the court room and heard a line of questions that were being asked, and from that line of questions, did you not get the idea that caused you to make that trip hunting up proof for the copper company?

A. No, sir, I did not know anything about it, when I left Chattanooga that I would go to Flat Creek. They asked me some questions, I remember, when I was in Chattanooga about Flat Creek, I did not know anything about it at that time.

Redirect examination.

By J. A. FOWLER, Esq.:

Q. 84. Mr. Dickey, were you asked anything about Flat Creek on your former examination?

A. It seems to me like I was.

Q. 85. That was on cross-examination?

A. On cross-examination, I think, yes, sir.

Q. 86. Did you hear anybody testify at Chattanooga about Flat Creek country at all?

A. I did not, sir.

Q. 87. Was there anybody asked about Flat Creek, who knew anything about it?

A. Not that I heard of. I was talking and knew nothing about it.

1222 Q. 88. And then you went down there to inform yourself about it?

A. Yes, sir.

Q. 89. You were asked, or you stated on one or two occasions you had smelled smoke at Mineral Bluff?

A. Yes, sir.

Q. 90. When was that, do you remember?

A. It was,—I would not be positive about that, but it was on Monday or Tuesday, two or three weeks ago, I believe, a couple of weeks ago, one Monday perhaps, I would not be positive about that.

Q. 91. You stated you had an interest in these Copper Companies, please explain that interest?

A. My interest is, I have property at Mineral Bluff own my own property there, own property in the town, and what I am worth is up there.

Q. 92. Have you got one dollar invested in either one of these companies?

A. Not a dollar.

Q. 93. So, this interest is in the welfare of the community, the main interest?

A. It is my interest in the welfare of the community, and my own interest, I consider my property would be worth less than fifty cents on the dollar to what it is today if the mines were closed.

Mr. DRAKE: I except to his conclusions as immaterial, irrelevant and incompetent.

Exception overruled and appeal taken.

1223 Recross-examination.

By L. HILL, Esq.:

Q.* 94. You have heard the witnesses testify, or asked questions about Flat Creek Country, have you not?

A. I do not remember anything about it except on cross examination I was asked on Cross examination about it, I think.

Q. 95. Did you hear some of the other witnesses asked about that too?

A. Not that I remember of.

Q. 96. Do you remember the names of the witnesses who were in the room and examined when you were in the room?

A. Yes, I believe I remember some of them?

Q. 97. Give the stenographer the names of some of the witnesses.

A. Tom Byers, was in there after I was examined, Mr. Thomas Byers was in there.

Q. 98. Who else?

A. Mr. P. F. Williams, I believe was examined after I was in there, after I was examined.

Q. 99. Do you remember any other one?

A. I do not think so, I do not remember anybody else.

Q. 100. Were you not in there when they examined witnesses, nearly all day Saturday?

A. No, sir, just a little while Saturday, I was not in there at all Saturday.

Q. 101. You cannot recall but two witnesses who testified after you were examined and while you were in the Court room?

A. I do not think of but two, that is all, I left at six o'clock Saturday morning for home.

Q. 102. Did you hear Mr. Quintrell testify?

A. No, sir.

Q. 103. Or Mr. Fouts?

A. No, sir.

1224 Q. 104. Or Mr. Hampton?

A. No, sir.

Q. 105. Or Mr. McNelley, you heard him testify?

A. Yes, sir, I heard him.

Q. 106. You heard Mr. Curtis?

A. I do not think I was in there.

Q. 107. He was the second witness after you, right after Mr. McNelley?

A. I might have been in there, I do not remember hearing him testify.

Q. 108. You said you heard Mr. P. F. Williams and Mr. Byers?

A. Yes, sir.

Q. 109. Did you hear Mr. Baugh?

A. I was in there when Mr. Baugh was testifying, I do not remember any of his testimony.

Q. 110. You were in there?

A. I think so.

Q. 111. Did you hear Mr. Turner?

A. No, sir.

Q. 112. Mr. Richards?

A. No, sir.

Mr. HILL: That is all.

Further this deponent saith not.

____ ____.

Sworn to before me, this 19th day of June, A. D. 1914.

____ ____,

Clerk and Master.

The distance traveled by this witness from his home to the place of taking of his deposition, was a total of 252 miles.

1225 C. G. BAUGH, being recalled, upon further examination, deposed:

Redirect examination.

By J. A. FOWLER, Esq.:

Q. 1. Mr. Baugh, since your examination at Chattanooga have you made a trip over and through a portion of North Georgia Mountains?
A. Yes, sir.
Q. 2. When did you make that trip?
A. Last Sunday.
Q. 3. In connection with whom did you go through that section?
A. With G. P. Dickey, William Dickey and John Henry Quintrell.
Q. 4. At whose instance did you go?
A. The D. S. C. & I. Company, for them.
Q. 5. Who came to you to get you to go?
A. I first received a telegram.
Q. 6. From the Company?
A. From the Company, yes, sir.
Q. 7. Which one of the officers?
A. Well, it was signed, D. S. C.
Q. 8. Then who was it that came to you, Mr. Quintrell?
A. Mr. Quintrell.
Q. 9. Where did you go, Mr. Baugh?
A. We went up the river in an automobile to Flat Creek, and then up Flat Creek, from the mouth to the head, Quintrell and I, and William and G. P. Dickey went about half way.
Q. 10. You went clear to the head?
A. Yes, sir.
Q. 11. How far was that up the creek?
A. I would say some two or three miles.
Q. 12. What did you do as you went along up the creek?
A. We looked at the timber on both sides of the creek.
1226 Q. 13. Did you make a careful observation of it?
A. As careful as we could, walking along, looking with our eyesight.
Q. 14. Did you go up both sides?
A. Yes, sir.
Q. 15. Did you notice the vegetation as you went along and the gardens and fields and crops?
A. Yes, sir.
Q. 16. State whether or not you saw any evidence at all of any smoke damage during the present season?
A. We could not see any what we called damage during this season.
Q. 17. What was the condition of the foliage on the forest?
A. It was in very good condition, green and growing.
Q. 18. Did the leaves appear in any way to have been burn- by smoke?

A. None that I could see.

Q. 19. What was the condition of the crops?

A. The crops looked well, the corn looks fairly well, the potatoes, oats and wheat.

Q. 20. Were there any evidences on any of the leaves that they had been burnt by smoke or affected by it in any way?

A. I did not notice any at all.

Q. 21. How much territory did you cover in making that inspection?

A. Well, we went from the mouth of Flat Creek to the head of it, I suppose that was a distance of two or three miles, then we come back and got into the automobile and went across the ridge up to another prong, to the head of it.

Q. 22. What was the condition up that prong?

A. The condition up both prongs were about the same so far as foliage was concerned.

Q. 23. Did you notice any oats?

A. Yes, we noticed a field of oats in the Flat Creek sec-
1227 tion, I suppose it was the Ledford property.

Q. 24. What was the condition of those oats?

A. They were looking good, a good oats crop.

Q. 25. Were you on any of the land that belongs to Mr. Shippen?

A. Yes, sir.

Q. 26. What was the condition of the forest on those lands?

A. The forests on those lands looked green and growing.

Q. 27. Was there anything apparently wrong with it?

A. *It* did not notice it, it looked as well as any forests I have been over.

Q. 28. You have seen, oft times, forrest which has been affected by the sulphur fumes, haven't you?

A. Yes, sir.

Q. 29. At one time you were sherif- of your county or surveyor?

A. No, I am surveyor now.

Q. 3-. Have you, or not travelled through that country a great deal?

A. Yes, a great deal over Fannin County, different parts of the county.

Q. 31. Do you know anything about that section last year?

A. I was not there last year, I was in that section in 1911, and not last year.

Q. 32. Not since 1911?

A. Not in that immediate section.

Recross-examination.

By J. A. DRANKE, Esq.:

Q. 33. What did that telegram say that you got?

A. I have it here, I think.

(Witness refers to telegram.)

Q. 34. You cannot remember without referring to it?

A. I do not think I could remember. (Handing telegram
1228 to Mr. Dranke.) You might read it into the record, it will tell exactly what it says.

Mr. DRANK: You can read it.

WITNESS (Reading:) "June 20th, 1914, Copper Hill, Tenn. "C. G. Baugh, Mineral Bluff. "Meet John Quintrell with Dickey at Blue Ridge early Sunday morning, S. S. C. & I. Company."

Q. 35. You are on very intimate terms with this Copper Company, are you not, Mr. Baugh?

A. I am not on bad terms with it as I know of.

Q. 36. If not, why were you willing to obey a telegram like that without any explanation of what they wanted you to do, or anything of that kind: and why would they have taken the liberty to have called on you to make a trip like that on Sunday?

A. Well, I received the telegram and went to Blue Ridge, and also went from there in the automobile as I stated.

Q. 37. Can you see why they would do that, and why you would obey it so readily?

A. Well, I usually obey telegrams when I wish to do my duty.

Q. 38. Do you think you owe a duty to those Copper Companies to quit your business and go through the country hunting up evidence for them?

A. I——

Q. 39. (Interrupting.) Do you think you owe them that duty?

A. Well, I went——

Mr. DRAKE: Please answer my question, Mr. Baugh.

A. I could not say that I owed them that duty, I went.

Q. 40. You testified in Chattanooga the other day, did you not?

A. Yes, sir.

Q. 41. I will ask you if you remained there and heard a lot of the evidence that was being introduced?

A. I did not hear any of the evidence that I know of but my own.

1229 Q. 42. You heard enough or got word enough that you knew it was important that you go out and get up this Flat Creek evidence you have been telling about?

A. I did not know anything about this until I received the telegram, and went to Blue Ridge.

Q. 43. And Mr. Quintrell, I believe, is the same gentleman who lives on the property known as Mine No. 20?

A. Yes, sir, I believe he lives on No. 20.

Q. 44. Well, whose house did you first stop at up there on that creek?

A. Well, we stopped at Mr. Davenport's.

Q. 45. Which one of the Davenports?

A. I believe it is Henry Davenport, if I am not mistaken.

Q. 46. That is the man that has got some fine apples up there?

A. I did not specially notice his apples.

Q. 47. Who was it had those fine apples up there, or did anybody have any fine apples that you saw?

A. I noticed apple trees and apples on some of the trees.

Q. 48. Did you not investigate especially to see how the apple crop was?

A. Well, what apples I saw looked very well.

Q. 49. Didn't you investigate and see some that were extra good?

A. They will average very well.

Q. 50. And the trees were being bent down almost breaking.

A. I saw some trees that were full and some that were not very full.

Q. 51. And yet apples are not anything like developed, yet, are they?

A. No, sir, unless they be June apples, June apples are getting ripe.

Q. 52. Were these June apples or late varieties that are planted in that country?

1230 A. I do not know what time they come in, I noticed some apples.

Q. 53. You know a limber twig apple, and a summer apple apart, do you not?

A. I should think I do, possibly.

Q. 54. Did not some body stop you gentlemen and show you gentlemen the best orchard you had seen in years?

A. No one stopped me to show me the best orchard I had seen in years, that is on this trip.

Q. 55. Who else did you stop with on this trip?

A. I do not know, that we stopped with any one else on this trip.

Q. 56. Who else did you see?

A. We saw quite a number of people.

Q. 57. Who, just name one of them?

A. Well, we passed over by Mr. Davenport's, who lives on some of the Shippen land.

Q. 58. That is Henry that you speak of?

A. Yes, sir.

Q. 59. Well, who else?

A. We were on part of Roscoe Miller's land.

Q. 60. Whose land, did you see Mr. Miller?

A. No, sir.

Q. 61. Whose else's land did you see?

A. I could not say, whose land.

Q. 62. Did you see any man up there but Henry Davenport?

A. I did not see Henry Davenport, that day, we stopped at his house.

Q. 63. Did you talk to any of those citizens and ask them about the smoke damage?

A. I do not know as we did.

Q. 64. Don't you know that the best way in the world to have found it, if you wanted to find any smoke damage, would

1231 be to have asked the people where it struck them the worst this year?

A. I was going to look especially for the timber, more than anything else.

Q. 65. You were not investigating anything but the forest, then?

A. I was looking at the forest principally.

Q. 66. You did not see any Irish potatoes that were smoke bit, did you?

A. I did not notice any that were damaged.

Q. 67. You saw that extra fine field of oats?

A. I saw some oats, yes.

Q. 68. Were they extra good?

A. Very good.

Q. 69. How many acres were there in that field?

A. Not a very large acreage, I suppose a couple of acres in each piece.

Q. 70. You stated I believe you were on part of Mr. Shippen's land, didn't you?

A. Yes.

Q. 71. What part were you on?

A. I do not know as I can call the lot numbers, I said I went up both prongs of Flat Creek, from the mouth to the head.

Q. 72. If you cannot remember enough about the lot numbers, how do you know you were on Mr. Shippen's land?

A. I go by adjoining land owners, I have been up in that country a great many times, I was only instructed to go up the Flat Creek Country, which I did, I went up both streams from the mouth to the head, past several mill *sets*, where the timber had been cut at one time, or they had had it done.

Q. 73. You do not know, of your own knowledge then, anything about Mr. Shippen's land, do you?

A. Well, yes, I know it is Mr. Shippen's land.

1232 Q. 74. You live in Mineral Bluff, I believe do you not?

A. Yes.

Q. 75. You testified in Chattanooga the other day about having seen or smelt smoke in your neighborhood this year?

A. Having seen it where?

Q. 76. Over around where you live in the Mineral Bluff section?

A. I do not know exactly.

Q. 77. I do not remember either, that is the reason I am asking you, if you smelt or saw any signs of smoke in there?

A. Well, of course a few times I have.

Q. 78. I will ask you what days?

A. I cannot remember that.

Q. 79. About how many times have you seen and smelt it this year?

A. I cannot tell you that.

Q. 80. How many times did you see and smell it last year?

A. I could not tell you that.

Further deponent saith not.

Sworn to before me this 20th day of June, 1914.

____ ____,

Clerk and Master.

The distance travelled by this witness from his home to place of giving his deposition and return was 252 miles.

1233 J. H. QUINTRELL, being recalled, upon further examination, deposed:

Redirect examination.

By J. A. FOWLER, Esq.:

Q. 1. Mr. Quintrell, state whether or not after your examination in Chattanooga you were requested to make a special investigation of a certain locality in the country by the D. S. C. & I. Company?

A. Yes, sir, I was.

Q. 2. Who was it that made that request of you?

A. Mr. Hyatt.

Q. 3. Gordon Hyatt, one of the counsel for the Ducktown Company?

A. Yes, sir.

Q. 4. Please state what you did in consequence of that request?

A. Well we went in there last Sunday and we found several dead trees and we went on, those trees looked like they might have been dead for ten years, they were white pine and chestnut. I do not think that I saw a dead oak.

Q. 5. State where you went?

A. Well, we went to Flat Creek, we went from the mouth of it to the head of it.

Q. 6. Who were with you?

A. Mr. Baugh and the two Mr. Dickeys.

Q. 7. Did you call for them as you went?

Q. Yes, sir.

Q. 8. Who furnished the automobile?

A. The D. S. C. & I. Company.

Q. 9. Were you in company with Mr. Baugh?

A. Yes, sir.

Q. 10. Did you go to the head of the river with Mr. Baugh?

A. We went plumb to the head of it, and drank water out of a spring that went up to make up the little creek.

1234 Q. 11. As you went along up Flat Creek, did you give careful attention to the foliage?

A. Yes, sir, we did, I was just as careful as I possibly could be, for to give a statement on.

Q. 12. Did you do the same as you came back?

A. I did, as we come back we went up the other prong I would say, going into it, it would be the right hand prong of the creek.

Q. 13. Describe fully what the condition of the forest was?

A. Well, sir, it was as pretty as I ever saw in my life. Of course I did not get down and see what every tree was, but it looks to me that it is nearly one half of the timber that is in there, is chestnut timber, and against the sides of the mountain, and it is all in bloom and it is fine, so we went on up the creek to the head, above where the saw-mills had been, right at the head of the creek. It does not seem as though there has ever been any timber cut up there, and it is as pretty a forest as I ever put my foot in.

Q. 14. Did you see any dead trees that appeared to have died recently?

A. No, sir, I did not.

Q. 15. Did you on this trip see any evidences whatever of any smoke damage during the present year?

A. I did not, not after I left a mile, I guess, this side of Copperhill, I saw smoke signs about a mile this side of Copperhill.

Q. 16. What do you mean by this side?

A. Not this side but going toward Mineral Bluff.

Q. 17. Was that in Georgia?

A. Yes, sir, in Georgia.

Q. 18. How far over the State line?

A. Well, it was only a mile over the State line.

1235 Q. 19. What was the extent of the damage you are speaking of?

A. Just the ends of the leaves were crisped up, you could see just as though there had been a light frost on the timber.

Q. 20. And how big a territory did that extend over?

A. Did *did* not last over a quarter of a mile, not more than that, from where I first noticed going in toward Georgia from Mineral Bluff.

Q. 21. Had that been recent or not?

A. Yes, it had not been more than a week or so, since it had been done.

Q. 22. I believe when you were on the witness stand before you testified about seeing smoke emitted one day?

A. Yes, sir.

Q. 22. From the Tennessee stack?

A. Yes, sir.

Q. 23. Was that smoke going in the direction of where you found this damage?

A. No, this smoke was later, where I was the other day was leading up the river above where I saw it before, it was about a mile sorter up the river from where I saw it before.

Q. 24. State whether or not the appearance of these leaves indicated it was recent smoke damage, since that time.

A. Yes, it showed as though it might have been created along about the same time.

Mr. HILL: We except to that as a conclusion of the witness without having qualified as an expert on smoke damage.

Exception overruled and appeal taken.

Q. 25. I believe you have stated before how long you have lived in that neighborhood.

A. Yes, sir.

Q. 26. Were you raised there?

1236 A. I was born and raised in that neighborhood, I was carried into Georgia out of Ducktown at the age of twelve year- old, and stayed there until Ducktown closed down, and I left that part of the country then and twenty-three years ago this May I come back.

Q. 27. Did you live there during all that period when so much smoke damage was done by the sulphur fumes?

A. Yes, sir, I did.

Q. 28. Now, Mr. Quintrell, were you on Flat Creek during last year?

A. No, sir, it was the first time I was there in my life last Sunday.

Q. 29. Did you notice the crops on the trip you made Sunday?

A. Yes, sir.

Q. 30. What was the condition of the crops?

A. They looked well.

Q. 31. Did they give any evidence of injury from smoke?

A. No, sir.

Q. 32. Did you see any oats growing?

A. Yes, sir.

Q. 33. What was their condition?

A. They were good, looked like fine oats. I did not see any trace of rust or anything on the oats.

Q. 34. Do you know whether oats are easily affected by smoke?

A. Yes, they are. I had about ten acres killed one time by the smoke.

Recross-examination.

By J. A. DRAKE, Esq.:

Q. 35. I will ask you if that is not the reason you do not find many oat patches in that country, because the smoke kills them so bad?

1237 A. Yes, sir it has been there in our country, up until the last two or three years, you could not raise oats. Last year I taken it on myself—I live at Epworth—own land there, I sowed a half acre last year in oats, and to see what it would do, and I am satisfied up until June first when I left home, in June, that the smoke was over on them oats from an average of five days a week, because we had a north-west breeze all last summer, and it carried the smoke directly from the Tennessee Copper Company's plant right over on to Epworth, where I live, and I walked down many times every day up until that time, to see whether it was taking any effect on it, and I could see no effect of it at all. Well, I left the first day of June and taken a trip in North Carolina, and before I got back the oats matured and my wife had them cut, and last fall when these companies and the Georgia men had their men in there inspecting the damage, why I invited them to go into my field and look at my oats, and told them that I had raised oats, and they matured, so they taken my word for it and did not come.

Q. 36. How far is that oat patch from Mine No. 20?

A. Mine No. 20, it is only two miles.

Q. 37. You are the same Mr. Quintrell that has filed a lot of photographs as exhibits one to five, are you not?

A. Yes, sir.

Q. 38. And took those pictures at your own expense and on your own initiative?

A. Yes, sir.

Q. 39. And filed them here to show that that smoke has not done any damage in fourteen years?

A. No, sir, I did not do that.

Q. 40. Did not one picture show that?

A. I did not think so, I do not say but what the timber
1238 shown on that photograph has been injured by the smoke, I did not say that at all.

Q. 41. Which picture is that?

A. That is number one, I did not say that it has not been injured, I just say how long it has been since that field was turned out.

Q. 42. Who did you see on this Sunday trip?

A. On this Sunday trip.

Q. 43. And talk with?

A. I saw a man by the name of Davenport that lived there.

Q. 44. Please, each time give the full name if you know, Henry or John?

A. Well, his name was Columbus Davenport. he lives right on this side of the mountain this side from Flat Creek, what they call Snakenation.

Q. 45. Who else did you see?

A. That is the only man that I saw. I saw Mr. Henry Davenport that lives on the first place we come to, I saw his boy and asked about his father and he said that his father was at Ducktown.

Q. 46. Then you did not talk with but one man, or did you talk with Columbus Davenport?

A. Yes, we talked with Columbus, as we come back, talked to him.

Q. 47. Is he the only one, the one that had the fine apples?

A. Yes, sir, he had a fine apple orchard.

Q. 48. Does anybody live up in that country?

A. It looked to me like right at the mouth of Flat Creek, there are two or three families, looked like, but that is all I saw with the exception of Henry Davenport on Flat Creek.

Q. 49. Whose houses. I am talking about, did you see any evidences of people living there?

1239 A. No, sir, nothing on Flat Creek, just one family or two.

Q. 50. Just one family up there?

A. There is another family below, Mr. Davenport, Mr. Henry Davenport is further up on the creek, I could not see the apple trees at first that I saw, and some of the boys with me drawed my attention to them bending with apples. We crossed the mountain from Flat Creek over in what is known in our country as Snake Nation.

Q. 51. Across the mountain?

A. Across from Flat Creek, yes, sir.

Q. 52. I believe you stated in your original examination at Chattanooga the other day that the building of these tall stacks and changing from the old roast heep methods had a tendency to bro-den the area of this damage?

A. It did when they went to smelting the ore green, the year the Company smelted the ore green there was some damage done in

our country, that is in Georgia, the year they were smelting green, then it carried it a distance away from the mines.

Q. 53. What year was that, I do not remember?

A. I would not be positive, but I think it was along about 1904, or 1905.

Q. 54. And does not these stacks that are there now, send the smoke out into the upper currents of the air, and does it not come out of these flues in a solid and compact form and go off into the air in one continuous volume?

A. You must understand that as we go along, we only have one high stack in our country.

Q. 55. Please answer my question, and then make your argument later.

A. Of course it is more confined, it is more confined in a smelter, into a smaller body and it goes in a smaller place in the stack.

Q. 56. Don't you know that the Ducktown Company has got a stack that is Seventy feet high?

1240 A. No, sir, the——

Q. 57. Is not the Ducktown Sulphur, Copper and Iron Company's stack seventy feet high?

A. I never have measured their stack, but if I give my guess, judgment, I looked at the stack a week ago, and we have a stack at our mine No. 20, that is fifty feet high, and I would not judge, taking the looks of it, not measuring the stack or nothing, I would not take the D. S. C. & I. Company's stack to be as high as our stack at No. 20.

Q. 58. If Mr. Laramoreux, the assistant Manager would swear it was seventy feet high, you would believe it?

A. I would take it, I never measured it.

Q. 59. And is not that seventy foot stack on a much higher ground than the Tennessee Company's stack?

A. No, sir, it is not.

Q. 60. And does not the smoke from the top of that stack come out almost at the same altitude as the Tennessee Company's?

A. I will tell you what I can do, my friend, I have looked at it time after time, I can stand at our mine, No. 20, and can look over the top of the Te-ssee Copper Company's stack, but I cannot see any stack at the D. — C. I. Company's plant. You can come there and look and you cannot see any stack at the D. — C. I. Company from there either.

Mr. DRAKE: Read the question.

(Question was then read.)

A. Of course I never put the level on it, I would not begin to say about that, because the Tennessee Company——

Mr. DRAKE (interrupting): That answers the question.

A. (Continuing:) I would not begin to say, because I never put the level on the two.

Mr. DRAKE: I except — the former answer as not being responsive and being argumentative.

Q. 61. Whose land did you visit last Sunday?

1241 A. Mr. Shippen's.

Q. 62. His especially?

A. Well, we visited his, that is what we went in there to look at, Mr. Shippen's property.

Q. 63. You went especially to look at his land?

A. I know just where the parties that are in there showed me, Mr. Shippen's land, and where Mr. Shippen had his saw-mill, cutting out the lumber.

Q. 64. You do not know of your own knowledge anything about it?

A. No. I could not swear positively that it was Mr. Shippen's land.

Q. 65. You do not know where they are located?

A. I know that is where they said it was.

Q. 66. Who?

A. Mr. Davenport's son, they own property adjoining Mr. Shippen's property, Henry Davenport.

Q. 67. You do not know a single lot number of his?

A. No, I do not.

Q. 68. You stated that the forest up there is extra fine?

A. Yes, sir, it is nice.

Q. 69. And the best that you ever put your foot in?

A. In the upper end of it, the upper end of it, as pretty, I say, as I ever saw.

Q. 70. Is that property not up close to where the saw-mill used to be?

A. No, it is above where it had been. They did not saw up where I was, the upper end of the creek looked as though there had never been any timber cut out of it, and the growth of the timber was high poplar and chestnut.

Q. 71. Mr. Shippen did have a mill up there at some previous time, didn't he?

A. I could not see where, but I could not say whether he did or not. I seen the signs of mills, lower down.

Q. 72. You saw old mill sets?

1242 A. I saw where there had been three sets up on Flat Creek, on one prong, and I noticed two sets, one or two, I would not be positive on the other prong.

Q. 73. How do you explain the fact that these saw mills did not kill all the timber out in that country if they are so bad on timber, you are talking about?

A. They did not kill it out.

Q. 74. Why is it that the saw mills did not cause the worms to come in there and eat out the timber?

A. Well, all the timber that I saw up there, or that is right around where Mr. Shippen's mills stood was dead.

Q. 75. Yes, there was a lot of dead timber.

A. Yes, sir, I say there is some dead timber.

Q. 76. And it was not so fine in that neighborhood?

A. Yes, it was fine, only right close where the saw mill sets were,

there is some white pine and some chestnuts that is dead, quite a number of them.

Q. 77. Well, did you see Prof. Bain when he come down there making some photographs?

A. I never saw him, no, sir.

Q. 78. You do not know then about the color photographs?

A. I did not know a thing about them, I was not at home the day they passed through there.

Further deponent saith not.

____ ____.

Sworn to before me this 19th day of June, 1914.

____ ____,

Clerk and Master.

The distance traveled by this witness from his home to the place of the taking of his deposition at Knoxville was 228 miles, for the round trip.

1243 H. P. DAVENPORT, the next witness called, being first duly sworn, was examined and deposed as follows:

Direct examination.

By J. A. FOWLER, Esq.:

Q.*1. Where do you live, Mr. Davenport?

A. I live in Fannin County, Georgia.

Q. 2. Whereabouts in Fannin County, do you live?

A. I live in about six miles south of Blue Ridge.

Q. 3. On what creek?

A. On what is known by the name of Flat Creek.

Q. 4. How far from the mouth of Flat Creek do you live?

A. I live right down close, three quarters of a mile I suppose.

Q. 5. How long have you lived there?

A. I have been living there about seven years.

Q. 6. Do you own a farm there?

A. Yes, sir.

Q. 7. How large a farm?

A. 160 acres.

Q. 8. Have you a crop on that farm this year?

A. Yes, sir.

Q. 9. What are you growing?

A. I am growing corn, potatoes, cabbage, beans, watermelons, potatoes, and vegetables of that kind, you know, garden stuff.

Q. 10. Any fruits?

A. My orchard that I have got, on my apples, they are very young, and a few have scattering apples.

Q. 11. What is the condition of your crop this year?

A. My corn this year, some how or another is a little small, the crop of corn, all of it I noticed. There is no corn that I noticed that seems to be so large on account of the dry weather.

1244 Q. 12. Have you had a pretty dry spring through there?
A. Yes, sir, very dry.
Q. 13. Have you noticed any evidence of any smoke damage to that crop this year?
A. Nothing only on late potato patch, I planted, I was over in it—I have been working at Copperhill myself, as a carpenter at McCays, and I have not been with the Company. I have not been at home this spring very often, now and then I would go in home and walk over into it, my Irish potato patch, and see some of the leaves of the tops that were kinder killed, is all that I have noticed.
Q. 14. When was that?
A. That has been about two weeks ago, two or three somewheres right along there.
Q. 15. Could you say for certain if it was done by smoke or something else?
A. No, sir, I could not say what done it.
Q. 16. State whether or not dry weather has some effect on Irish potatoes where they are near maturity?
A. Yes, sir, I think so. I think it would.

Mr. DRAKE: I except to that as being a conclusion of the witness. Exception overruled and appeal taken.

Q. 17. Mr. Davenport, were you with some gentlemen that went up Flat Creek last Sunday?
A. Well, they said they were there. I was not at home, you know.
Q. 18. You did not go with them?
A. No, sir; I was not at home.
Q. 19. Have you noticed the forests around in your section during the present year?
A. You mean this year?
Q. 20. Yes.
1245 A. When I was at home, I did notice it, yes, went right down through it, and there is not much cleared land in my place, as pretty near all the cleared land there is is right on that creek.
Q. 21. What is the condition of the foliage on the forest this year?
A. The young forest in there?
Q. 22. Yes?
A. The young forest in there so far as I know looks all right, so far.
Q. 23. Have you noticed any evidence of smoke damage right there, on any of the trees?
A. No, sir, not this year, I have not.
Q. 24. There are a good many chestnut trees through there?
A. Yes, sir, a good many.
Q. 25. How are they looking?
A. Well, they were looking, the chestnut timber there, were looking all right, blooming out the last time I was at home, and looked very well. The chestnut timber did, all looked well, really it looked

better to me, the timber does in there for this year, and 1913, than it did back of that, the timber does.

Q. 26. I wish you would state what the condition of the timber was last year through your section?

A. Last year, well, I think the condition of the timber through there last year, that is last year, I think it was in good condition.

Q. 27. Do you know of any damage from smoke in that section during the year 1913?

A. Do you mean right where I live?

Q. 28. Anywhere in the Flat Creek section in there?

A. That is a little creek in there where I live.

1246 Q. 29. I am speaking about that section over on Flat Creek?

A. Well, no, I did not notice any that is, if you will let me explain that.

Mr. FOWLER: Go ahead.

A. (Continuing:) You see where this smoke settles down, my experience is, where it settles down or falls, it browns the leaves, it will turn the leaves all brown on the timber for a right smart spot you see.

Q. 30. How large a spot?

A. I could not tell, it might go on over a half mile or a mile further, and you would not see the appearance of it, that is the effect of it. That is about the way I have seen it, Judge.

Q. 31. How was it there in 1906 and 1907, and along in there?

A. Let me get my mind back there, as near as I can, I could not tell you because I have not been taking any note of this, if I had been taking a note of it, of course I would know, but I have not. I have not been taking note, and I have not been looking around about the smoke and timber, I am a carpenter and the most of my time I am employed away from home.

Q. 32. Tell us back a few years, how the timber looked through there?

A. The timber was considerably burnt a few years back.

Q. 33. Was there any of it killed?

A. I cannot tell you about that.

Q. 34. You have described how that smoke does?

A. The leaves have been killed, I can say that, but the body of the tree, I could not tell you about that.

Q. 35. Mr. Davenport, I say you have described the effect of that smoke on patches of timber?

A. Yes, sir.

Q. 36. When was it you noticed that effect on the timber?

A. My recollection is when I paid the most attention to the smoke on the timber through that section there of country was about nineteen ten or eleven, some where I could not say posi-

1247 tively, but then, it seems to me about that time was the most that I discovered through the country where I live.

Q. 37. Did you notice any such effect on the timber, or spots of timber last year,—I mean 1913?

A. No, sir, No, I have no recollection of it.

Q. 38. What was the condition of the chestnut crop and the *past* in general through there last year.

A. We had a right good mast, had a good mast of chestnut and acorns, that is considering, I would like to explain right there. Now, I am not considering we had a good mast, but now, mind you there has been a sight of that timber all over that section of the country that has been so milled out you cannot expect the mast to do as good as where it is that way as where it is not.

Q. 39. As where there is more timber?

A. Yes.

Q. 40. Did the hogs fatten in the woods last year?

A. Yes, sir, the hogs got in good shape up around me and above that in the mountains.

Q. 41. Can you say whether or not you noticed any evidences of smoke fumes year before last through there, 1912?

A. On some bushes when I went home, I do not know whether it was smoke or what it was, that is something I am not going to be positive about, because it was something I do not know about, I noticed a few bushes down there brown right where I live. It is woods right close to my house. I said to my wife, "do you reckon that is Ducktown smoke, that has browned them," she said she did not know, and I did not know either.

Q. 42. That was in the year 1912?

A. Yes, sir.

Q. 43. Was that the only apparent damage that you could attribute to smoke during that year, that you saw during that year?

A. Well, I will tell you men how I am—are you getting me——

1248 Q. 44. I am talking about that Flat Creek section.

A. The vegetables like I told you, sometimes I could see that the smoke had affected the vegetables.

Q. 45. That was in 1912?

A. Yes, that year I recall why I saw that now, was that one of the Ledfords went through my crop looking over my place.

Q. 46. You did raise a garden?

A. Yes, sir.

Q. 47. Did you have a good garden?

A. I had the best garden, said to be, there was in the whole country.

Q. 48. Did you, what did you raise that year?

A. Beans, potatoes, beets, cabbage, everything that grows in the garden, I do that every year.

Q. 49. You have done that every year in there?

A. Yes, I have done it every year.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 50. As I understand you, Mr. Davenport, you are a carpenter, and are away from home the biggest part of the time through the summer, are you not?

A. Yes, I go backwards and forward, may be off a month, some

times, may be two weeks, may be three weeks and then in home and stay all night and a day or two days, and then back to work.

Q. 51. Where you work at McCay, Tennessee, or Georgia, is just across the river from Copperhill, is it not?

A. Yes, sir.

Q. 52. Practically the same town, only the river intervenes?

A. Yes, sir, that is it.

1249 Q. 53. And in your work as a carpenter that does not cause you to go into the woods and fields and gardens as much as if you were a farmer?

A. That is what I said. I said I did not visit them like a man that would be farming.

Q. 54. And for that reason you are not up in this smoke business?

A. No, sir, I really am not up on it. Like men that went and looked for it.

Q. 55. You do know that your potatoes were bit with something about two weeks ago, that you spoke about?

A. Yes, sir, the leaves on them were dead, I do not know what it was, I could not say that you know.

Q. 56. Don't you know, Mr. Davenport, that the effects of the drouth, affects the whole plant from the bottom to the top, and do not come along and parch the leaves right on top.

A. That is what I testified to that it did.

Q. 57. And is it not a fact, however, that if a leaf was parched right on top, like frost for instance, would you say that was the drouth affecting it or something else?

A. I would not know, I would think it was something else, if the plant was affected from the ground up from the drouth, I do not know about these things.

Q. 58. Do you know enough about this smoke effect on vegetation to say whether the effects are very much like frost?

A. Well, sir, from the appearance of the leaves it looks like it might be.

Q. 59. I believe you stated a while ago in a little different form, and is it not a fact, that certain sections of trees on a mountain side, or a hill side would be worse affected from the smoke than others?

A. Yes, sir.

Q. 60. Have you smelled any smoke down there this year, when at home?

1250 A. When I was at home, yes.

Q. 61. How far away from Ducktown or Copperhill is it?

A. I think it was that, I smelled it, it smelled like the smoke down here.

Q. 62. You know how that sulphur smoke smells?

A. Yes.

Q. 63. You have smelled smoke that was similar to it?

A. Oh, yes.

Q. 64. How far is it away from Ducktown and Copperhill, your home?

A. You mean an air course?

Q. 65. Yes, by the road and then estimate it by an air course?
A. It is about eighteen miles around the road, I think, may be it is more than that, let's hold on, I want to be as near right as I can. I do not know whether it is counted sixteen miles to Blue Ridge, or not, if I knew what it was counted to Copperhill or Blue Ridge, I——

Q. 66. Well, you will have to estimate it.
A. I believe it is sixteen—it is eighteen or nineteen miles.
Q. 67. That is by road?
A. Yes, sir, nineteen miles by road.
Q. 68. How far do you judge it to be by an air course?
A. I would think about twelve or thirteen miles.
Q. 69. If that smoke that you smelled come from Copperhill to Ducktown, which way would it come with respect to Blue Ridge?
A. It would go to the south of Blue Ridge some to get in on me, I do not know exactly how far, but it would have to go to the south some of Blue Ridge, if it come direct across you mean?
Q. 70. I believe you stated you lived directly south of Blue Ridge in your examination?
A. Yes, sir.
Q. 71. Then the smoke coming to you would come some distance south of Blue Ridge to reach you?
1251 A. Yes, sir.
Q. 72. About how far would you judge by an air course do you live from Blue Ridge?
A. Well, let's get it down, it would miss Blue Ridge about some three miles, I guess, two or three, somewhere along there I could not tell you hardly, I do not know.

Redirect examination.

By J. A. FOWLER, Esq.:

Q. 73. Mr. Davenport, when were you last over at home?
A. I was at home last Tuesday was a week ago.
Q. 74. Was that when you noticed the apparent effect of sulphur fumes on the Irish potatoes?
A. I do not know whether it was that or not, I would not say it was the effect of it.
Q. 75. Was that the date you noticed it
A. Yes, that was the time I noticed it, I had trouble with my potato patch.

Further deponent saith not.

Sworn to before me this 22nd day of June, 1914.

____ ____,
Deputy Clerk U. S. District Court.

The distance travelled by this witness from his home to the place of giving his deposition, and return was a total of 228 miles.

1252 G. P. DICKEY, being recalled, upon further examination deposed as follows:

Redirect examination.

By J. A. FOWLER, Esq.:

Q. 1. Mr. Dickey, since you gave your testimony at Chattanooga, state whether or not you have made a trip up Flat Creek?

A. Yes, sir, I made a trip up Flat Creek.

Q. 2. When did you do that?

A. Last Sunday evening.

Q. 3. At whose instance?

A. Col. Hyatt, I think is the one that spoke to me about that.

Q. 4. How did you go over there?

A. We went over in an automobile.

Q. 5. Who furnished the automobile?

A. Mr. Quintrell had it engaged, I reckon he was in charge, he seemed to be in charge of it.

Q. 6. How far did you go up Flat Creek?

A. We went up, I could not say exactly how far we went. We got out of the automobile where Mr. Davenport lives there, and walked something like two or three miles, and the other parties went further, some went further than I did I turned and went back on the mountain.

Q. 7. Did you make a careful examination of the forest as you went up?

A. Yes, sir.

Q. 8. You noticed the crops and vegetation?

A. Well, after we left the Davenports we did not see any one living there, but before we got there the crops were in good condition.

Q. 9. Did you also examine the forest, give special attention as you went along and came back to the forest?

A. Yes, sir.

Q. 10. What condition did you find the foliage of the forest in?

1253 A. It was fine, as nice a foliage as I ever saw, we saw some dead trees up there.

Q. 11. How long had they been dead, or appeared to have been dead?

A. A good long while.

Q. 12. Most of those trees of what kind?

A. Most of them were old chestnut trees, we see a right smart of dead timber.

Q. 13. Did you notice any numbers that appeared to have died last year?

A. No, sir, I saw one tree that had been struck by lightning, it was torn all to pieces.

Q. 14. Did you see any evidences at all of any smoke damages in that section?

A. I did not. Then, after we left there we came across the mountain, went down in what is known as Snake Nation country, and the

crops were mighty fine on the south side of the mountains, we saw some nice orchards, and gardens and the rye crop seemed to be splendid.

Q. 15. Did you notice the foliage of the crops all through the Snake Nation country?

A. Yes, sir.

Q. 16. What was the condition?

A. I did not see any signs of smoke on them.

Q. 17. Did you on the trip see any signs of smoke damage?

A. I did not.

Q. 18. Do you know whether or not you were on Mr. Shippen's land?

A. Well, I was told that I was, a cousin of mine had sold a lot up there further, adjoining that, and he told me they had run the line, and the people there told me that was Shippen's land.

Q. 19. Were there places where saw mills had been set there?

A. Yes, sir.

1254 Q. 20. Do you know whether or not Mr. Shippen ran saw-mills over in that section?

A. Only what I have heard, and heard people telling that away back years ago, they told me that they were hauling up there.

Mr. DRAKE: I except to all the witness' answers as to what he heard other people say, as hearsay.

Exception overruled and appeal taken.

Q. 21. Have you any idea of how much of the land owned by Mr. Shippen you were over?

A. Well, I could not tell exactly how much, I went something like three miles, I reckon, some of the other boys went further than I did.

Mr. DRAKE: We except to the answer, as being a conclusion of the witness, not having stated that he knew the boundaries of Mr. Shippen's land.

Exception overruled and appeal taken.

Q. 22. What was the condition of the timber on those lands which you understood belonged to Mr. Shippen?

A. They were in good condition.

Q. 23. Did you notice any evidence of smoke damage in *a* that land?

A. No, not a bit. I noticed some very nice locusts there, tall locusts, and they tell me that it is bad on them, and I noticed them particularly.

Q. 24. Is there a great deal of chestnut growth there?

A. A lot of it.

Q. 25. What is the condition of the chestnut?

A. I never saw as many blooms in my life in any one year, as there is this year.

1255 Q. 26. Do you know whether or not the chestnut timber is easily affected by sulphur fumes?

A. Yes, sir, it is.

Q. 27. Do you know whether or not it is a fact that chestnut timber in other sections of the country far away from these furnaces is dying?

A. Well, I have not been out this year very far, to see about that no more than what I have heard.

Q. 28. Do you know anything about that section last year, were you through there?

A. I was not in that section last year.

Q. 29. Were you through there before, year before last?

A. No, I have not been in that section since 1910.

Q. 30. Do you know whether any damage was being done in there in 1910, or did you notice enough to tell?

A. I do not know as I noticed particularly right in that immediate section. I was not up on his land, I was right there in that neighborhood, all through it.

Cross-examination.

By J. A. DRAKE, Esq.:

Q. 31. Well, whose places did you visit, first though, who did you talk to on this trip, Mr. Dickey?

A. We talked to Mr. Davenport up there.

Q. 32. He is the one that is here today?

A. No, sir, he is not the one I did not see him.

Q. 33. Anybody else?

A. Mr. Willis that lives up there.

Q. 34. You talked with him?

A. Yes, sir.

Q. 35. What is his name?

A. I do not know what his given name is, he is a son of that Willis that runs the store, we always call him, Pet, J. M. I believe, I am not certain, is the way he signs his name.

1256 Q. 36. What is the son's name?

A. I do not know.

Q. 37. Who else did you see up there on that trip?

A. I saw several fellows, I did not talk with, met several fellows in the road.

Q. 38. Did you tell them you were up there hunting smoke damage?

A. I told Mr. Willis I was.

Q. 39. Did you not tell these other fellows you met in the road?

A. No, I did not talk with them.

Q. 40. Did not you know those fellows you met in the road?

A. I do not know. I did not pay any attention, that fellow Davenport, I stopped and talked to him a while.

Q. 41. What part of Fannin County is Mineral Bluff in?

A. In the northern part.

Q. 42. Is it not a little more northwest?

A. Well, I think it is a little.

Q. 43. How far is it from Copperhill?

A. Mineral Bluff?

Q. 44. Yes?
A. We call it nine miles.
Q. 45. How far is it from this Flat Creek Country you went and visited on last Sunday?
A. Copperhill?
Q. 46. No, Mineral Bluff?
A. Mineral Bluff, well, I guess it is,—something like eight miles, I guess the way we went.
Q. 47. Mr. Quintrell, I believe got the automobile and got you other gentlemen and carried you down there?
A. He met me at Blue Ridge.
Q. 48. You came across and met him then, and you went all together?
A. He came to Blue Ridge and I got in the automobile there and we went to Flat Creek.
Q. 49. Who first called on you to go?
A. Mr. Hyatt.
1257 Q. 50. In what way?
A. He asked me if I would go.
Q. 51. You mean he saw you in person?
A. Yes, sir, saw me in Chattanooga.
Q. 52. Whose lands did you go on, on that trip?
A. Well, we were on the Lovingood.
Q. 53. Which Lovingood?
A. W. B.
Q. 54. Whose else?
A. Miller, they call him Crusoe.
Q. 55. Whose else?
A. Tarpley, George Tarpley.
Q. 56. Whose else?
A. Well, we went through Will Rogers', it is down on the river, Will Rogers' what is known as the old Chastine farm.
Q. 57. Did any of those fellows with you, or that you have named, point out smoke damage to you?
A. No, sir.
Q. 58. Did they know you were up there hunting smoke damage?
A. I do not know as they did, some one of the crowd told me.
Q. 59. Did you smell any smoke down there that day?
A. No, sir.
Q. 60. You went down there especially to investigate Mr. Shippen's lands, did you not?
A. I do not know that we investigated his lands especially, we investigated the lands on Flat Creek, is what they told me.
Q. 61. You did not go especially to see Mr. Shippen's lands?
A. I do not know, sir.
Q. 62. In fact you do not know whether you were on Mr. Shippen's land, do you?
A. Yes, I know what the other fellows said.
Q. 63. That is all, you do not know of your own knowledge.
A. I should think that we were, from what they all told me, and

what I know of where I had always been told it was Shippen's lands.

1258 Q. 64. Did you see or smell any smoke down there last Sunday?

A. No, sir, I did not.

Q. 65. Did you ask any of these men that you met up with to point out to you some smoke damage?

A. I do not think I did. I suppose that fellow Wallis, did know, I asked him, I said can you show me any, and he said no he did not see any.

Q. 66. He is the only one you asked about the smoke?

A. That is the only one I talked to to amount to anything.

Further this deponent saith not.

Sworn to before me this 20th day of June, A. D. 1914.

____ ____,

Clerk and Master.

The distance travelled by this witness from his home to Knoxville, Tennessee, the point of giving this deposition and return home was a total of 252 miles.

1259 J. C. ADDINGTON, the next witness called, being first duly sworn, upon examination deposed as follows:

Direct examination.

By J. A. FOWLER, Esq.:

Q. 1. Mr. Addington, where do you live?

A. I live in Fannin County, one mile east of Morgan.

Q. 2. Fanning County, Georgia.

A. Yes sir, Fannin County, Georgia.

Q. 3. How far is that from Copperhill?

A. About thirteen miles.

Q. 4. Thirteen miles air line?

A. No, the way the crow flies, the way we go to Copperhill.

Q. 5. How far do you suppose it is on an air line?

A. I could not tell you, of course it is a good deal nearer.

Q. 6. How long have you lived there, Mr. Addington?

A. I was born and raised there until a few years ago, when I went west and stayed eight and one-half years and then come back there.

Q. 7. Do you remember when you went west?

A. About fourteen years ago, somewhere near fourteen years ago.

Q. 8. In what year did you come back?

A. I come back last April five years ago, the best I remember.

Q. 9. That was in 1909?

A. 1909, I guess.

Q. 10. What have you been doing since you came back?

A. I have been trying to farm a little part of the time.

Q. 11. How long have you been farming?

A. Well, I have been farming from ever since I came back from the West, I was raised on the farm and farmed some in the West and sometimes I have done something else.

Q. 12. Do you own a farm now?

A. A piece of one.

Q. 13. How large is it?

A. Forty acres, more or less.

1260 Q. 14. And when did you buy that farm?

A. I did not buy it, I heired it, give to me.

Q. 15. When did you get the farm?

A. Well, I have been on the farm as mine ever since I have been back from the West, but I do not recall exactly the time I got the deed for it.

Q. 16. How many years have you been cultivating that place?

A. About six years, I believe, I have been back, five and a half, and this will be six years.

Q. 17. When you began to cultivate it, what kind of land was it?

A. It was on the outside, not outside, but thrown out of cultivation and growed up in sassafrass sprouts, blackberries, and such things with just a few little patches and the balance was all growed up, but it would not make anything hardly, just a few good stalks now and then and the balance was cut down to the ground for silage seed.

Q. 18. And about how much corn would it produce to the acre when you first got it?

A. It made so little it is hard to say, I do not believe I made over ten or fifteen bushels, on four or five acres of any good corn.

Q. 19. You began to improve it, did you?

A. Yes, sir.

Q. 20. Cleared the briers and the underbrush and grubs out?

A. Shure, I took the grubs out and a good many of the stumps, and a great deal of the rocks, applied sceintific methods of farming, plowed, sub-soiled and rotated as near as I could.

Mr. DRAKE: We except to that class of evidence as being foreign to the issue.

Exception overruled and appeal taken.

Q. 21. How much did you have in corn last year, how many acres?

A. I had four or five acres.

Q. 22. How much corn did you make?

A. I did not measure but the one acre.

Q. 23. That was your best acre?

1261 A. Yes, sir.

Q. 24. How much did you make?

A. Well, I made somewhere, just to guess at it, from, in the neighborhood of three hundred bushels.

Q. 25. How much did you make on that acre that you measured?

A. One hundred and thirty-six bushels, fifty-two pounds.

Q. 26. Was there any premium offered in Georgia last year for the best acre of upland corn?

A. Yes, sir.

Q. 27. Who got the premium?

A. Myself.

Q. 28. Did Fannin County also offer a premium?

A. I do not know whether it was exactly the County or not, our Blue Ridge Summit, the newspaper put out an award of One Hundred Dollars to be awarded in prizes and I took forty dollars, took the first premium.

Q. 29. You got the first prize?

A. Yes sir.

Q. 30. Did you raise any other crops besides corn last year?

A. I raised potatoes.

Q. 31. You mean Irish potatoes,—white potatoes they call them in the North?

A. Yes sir, Irish potatoes.

Q. 32. How many acres of potatoes did you raise?

A. I did not measure it, anywhere from two to three acres.

Q. 33. How much did you raise to the acre?

A. On that land in potatoes, I ran one hundred eighty-nine bushels to the acre and I followed those potatoes with corn and made seventy-five bushels of corn to the acre.

Q. 34. You also raised corn and potatoes in the year 1912, did you?

A. Yes sir, though I did not make quite so much trucked in 1912 a great deal.

1262 Q. 35. What kind of season did you have last year?

A. Very dry.

Q. 36. Was that a good season for potatoes?

A. Nor sir, potato-s need a great deal of precipitation.

Q. 37. Well, state whether or not the dry weather also injured your corn crop?

A. Yes sir.

Q. 38. Now, was that acre of corn on a hillside?

A. Well, you would call it a hillside I guess, right up alongside of the mountain, at the head of the branch upland, if we have got any in North Georgia.

Q. 39. How far is that from the branch?

A. There is a little branch that runs along the whole edge of it, but it lays from that up on to the hill.

Q. 40. Now, Mr. Addington, state whether or not when you first began to farm there, that is a short time after you came back from the West, you noticed the effects of the sulphur smoke in that immediate locality there.

A. Why yes, some little bit, I never studied the smoke business very much. I heard a great deal of complaint of it.

Q. 41. Did you notice the effect of smoke on the timber, did it look like it had been scorched or burnt leaves?

A. Not very much, around in the section, but in certain places.

Q. 42. When did you last notice anything that indicated that the leaves of the trees had been burnt by smoke?

A. Yesterday morning.

Q. 43. Where did you notice that?

A. Coming down to Copperhill the Broad road within four miles of Copperhill.

Q. 44. You mean as you were coming here?

A. Yes sir, coming on.

Q. 45. That was in your section of the country?

A. Oh no.

Q. 46. Now, I mean in your section of the country, through Georgia?

1263

A. I never noticed any this year.

Q. 47. Then you say that you noticed any appearance of smoke damage to the leaves of the forest last year?

A. I cannot really say whether I did last year or not. Now I have noticed it there close to Blue Ridge Georgia. I noticed some, I cannot say whether it was the last year or the year before, just noticed it, that is all.

Q. 48. Is that the only place where you noticed it at that time?

A. Well, the only place I remember noticing it, of course, I do not know.

Q. 49. Could you say for certain that that was your before last?

A. No, I could not say at all when it was positively.

Q. 50. Now, with reference to your crops, Mr. Addington, have you noticed any damage this year which you could ascribe to the smoke fumes?

A. I saw nothing in my crops this year that I could ascribe to the smoke fumes. I saw a little mildew on the wheat and there seemed to be burnt or mildewed, some of the men, in there thought it was the smoke, but I do not know.

Q. 51. Had you or not, this year, any wheat on that acre where you grew the prize corn?

A. Yes sir.

Q. 52. Now, do you have reference to the wheat that is growing on that acre?

A. Yes sir, and other land there, too, all the wheat I have got is right there in a little patch.

Q. 53. Have you cut your wheat?

A. Yes sir, cut all the rest of it, I *liked* a little bit of being done yesterday.

Q. 54. You have not had it threshed?

A. No sir, I have not.

Q. 55. In your judgment, how much has that land produced to the acre this year?

1264

A. Somewhere in the neighborhood of fifty bushels.

Q. 56. Have you some samples of the wheat present with you?

A. Yes sir, I have.

Q. 57. I will ask you to file that as Exhibit 1 to your deposition.

A. I do so.

Q. 58. Can you see the stacks of the Tennessee Copper Company from your place?

A. Not from my place, at least, I never have.

Q. 59. Can you from any place in that locality?

A. About three miles from there I can, between Morgan and Mineral Bluff.

Q. 60. Now, Mr. Addington, I show you some pictures which appear on page 13 of a pamphlet, which is styled "1914 Year Book" Published by Morris Fertilizer Co."; state whether or not these are pictures taken from your prize acre of corn.

A. Yes sir, that one is (indicating).

Q. 61. You mean the first and the second?

A. The two top ones, yes sir.

Q. 62. Well, what about the one below?

A. That is of the corn that followed the potatoes that is, the late corn.

Q. 63. Then picture No. 3 is a picture of the corn which was planted in the land on which you had grown potatoes?

A. Yes sir, planted in every other middle, they were six feet middles and the potatoes were three feet, that growed my corn six foot apart in every other middle.

Q. 64. Did you use any fertilizer sold by this Morris Fertilizer Co.?

A. Yes sir.

Q. 65. Did you write the Morris Fertilizer Co. a letter on the 8th day of August, 1913.

A. I think that is correct.

1265 Mr. DRAKE: We except to that as immaterial.
Exception overruled and appeal taken.

Q. 66. Is that the letter that appears on page 12 of this pamphlet?

A. Is this the letter I wrote, you want to know; yes, I know it is, I have seen that book.

Q. 67. I wish you would read the letter.

Mr. DRAKE: We except to the letter and its contents as immaterial and irrelevant to the issue.

Mr. FOWLER (Reading from Morris Fertilizer Year Book for the Year 1914):

MORGANTOWN, GA., August 8th, 1913.

"Morris Fertilizer Co., Atlanta, Ga.

GENTLEMEN: "I have used a great deal of fertilizer of different kinds, and I will say that there is no better made than the Morris brands. I try to farm on scientific principles, as every farmer should do. I study plant life and soil conditions, fertilizers and their effects upon the crops, and among the many kinds of fertilizers I have used, I find that the Morris brands are all you claim for them and then some. I would not hesitate to say that the Morris Fertilizer Co. is perfectly reliable and they are the one great agency that is helping to revolutionize the farm industry in the South, and after their great name shall die out in the long-forgotten past, their good works will roll on down through the ages as long as a plow continues to rip up the crust of this earth. It is by the use of a high grade fertilizer like the Morris goods that we can ever hope to make our acreage less and our yields more. I used the Morris fertilizer

extensively and have been over the principal corn belts of
1266 the North and West, and nowhere have I seen better corn than I have; and if any one is from Missouri and thinks this sounds fishy, they are welcome to investigate. So long live all fertilizers like the Morris brands."

J. C. ADDINGTON."

Q. 68. You were trying to tell the truth there, to these gentlemen?

A. I try to tell it always.

Q. 69. When you sent these pictures to this company, you wrote them a letter, did you?

A. Yes sir.

Q. 70. I show you what purports to be an extract from that letter, on page 12 of the pamphlet referred to; was that included in that letter?

A. Yes, that is what I wrote all that on this page.

Mr. DRAKE: We except to that on the grounds as stated before and the extract about to be read on the ground it is immaterial, irrelevant and incompetent with relation to this issue.

Exception overruled and appeal taken.

Mr. FOWLER (Reading from Morris Fertilizer Year Book): "I had these pictures taken August 5th, by the best picture man in these mountains, yet they do not give my crop justice, as they do not show the ears as good as they are by a long shot. Pictures No. 1 and 2 show a piece of corn that will make about one hundred and fifty bushels to the acre. If I had got rain enough, it would have made two hundred and may do it any way. No. 1 is the end view and No. 2 is the side view. No. 3 is a picture of a field of late corn where I grew a crop of three hundred bushels of Irish potatoes
1267 to the acre, and if frost don't come too soon, this corn will probably make one hundred and fifty to two hundred bushels to the acre. I used one ton of your high grade fertilizer to the acre on the potato-s and none at all on the corn. Don't this show that your fertilizer is good and lasting? And just think that two crops in one year on the same land, means more than four hundred dollars to the acre to me."

Q. 71. What you stated in that letter there was correct, was it?

A. Well, as far as I could see then, it was. I wrote that before the crop was gathered, you know.

Q. 72. When did you write that letter?

A. That is dated there, I cannot remember the date, I suppose that is correct.

Q. 72. You wrote that letter on September 12th, I believe.

A. I do not remember, what time it was.

Q. 73. You were there sending these three photographs in before September 12th, were you not, this says, "In sending us three photographs of his crop under date of September 12th, Mr. Addington write- as follows."

A. Yes, that is there.

Q. 74. Does that agree with your recollection?
A. Yes sir.
Q. 75. Does not the average crop of corn mature by September 12th?
A. Not in our country, we have too much altitude.
Q. *75.* About when do they mature, then?
A. Along in October. I have gathered it between the 1st and 18th of October, I did send some to the State Fair and to make out a report, but it was barely ripe, to cut it at that time, but you can by the 20th of October.
Q. 76. But, it has quit growing by September 12th, and hardens after that?
A. I could not say. It has not yet matured until it has
1268 hardened and gets in the state where you can gather and store it, dry in other words.
Q. 77. What time do you pull fodder in North Georgia?
A. When it is ripe.
Q. 78. When is it ripe?
A. Well, a whole lot depends upon that, some ripens early, the early corn ripens earlier, and some later. Late corn, I never pull fodder off of late corn, I cut it and shock it.
Q. 79. When you pull the fodder off of corn, it is supposed to have quit growing, is not that true?
A. If it is not very well cured, you will lose in weight of the corn more than you make in fodder. Of course, stripping all the stalks of fodder, will stop the growing of corn anyway.
Q. 80. *If* not fodder pulled through there by the last of August?
A. I do not try to keep up with those things. I do not know. I pull fodder when it gets ripe. I do not know when that is, though they usually commence in September sometimes. A great many pull it before it is ripe, and ready to pull. I do not think it is ready until the corn is thoroughly matured.
Q. 81. I believe you say you have noticed no damage this year to your crops?
A. I have not been looking for it, and have not seen any, that I can say really.
Q. 82. Did you file a claim with the arbitrators for damages to your crop last year?
A. Yes, in 1913 I did.
Q. 83. How much did you get?
A. I got the great amount of Fifteen Dollars.
Q. 84. Was that what they paid you?
A. Yes, I did not get that, I got part of it and the attorney got the other part.
1269 Q. 85. Was that for damage to your corn and potato crop?
A. Well, that is what they said it was for.

Cross-examination.

By LEON HILL, Esq.:

Q. 86. Mr. Addington, you regard your farming as more of a profession than business, in other words, you use the best methods of farming?

A. The best I know how.

Q. 87. You have studied it, made a life study, a life work of it?

A. No.

Q. 88. You have not, you have been farming all your life?

A. No, sir, I was born with a genius and inclination of a farmer, but I have never studied it all my life.

Q. 89. What I mean, you have devoted your time and talents to developing the land and improving it to raise the best crop you can?

A. I do.

Q. 90. You study the best methods of production?

A. Yes, sir.

Q. 91. And the best fertilizers?

A. Yes sir.

Q. 92. The best methods of plowing and turning the land?

A. The best methods I can get in that way.

Q. 93. The best methods of alternating the crops?

A. Yes sir.

Q. 94. And also the best methods of fertilization?

A. Yes sir.

Q. 95. And the best tools to work it with?

A. I have.

Q. 96. Your neighbors, Mr. Addington, the other people right there in the same country, do not develop the land to the same degree that you do, do they?

A. No sir.

1270 Q. 97. In other words, there is no person in that country that devotes as much thought as you do to farming.

A. There is not ninety per cent. of the farmers that stop and think. When they do stop, they do not think, farming in my country, the most part of the country, is done exactly contrary to plant life and soil conditions.

Q. 98. In the mountains then in Fannin County and in North Georgia, you say that the farmers, the vast majority of them operate their land contrary to the plant life?

A. Yes sir, I know they do.

Q. 99. Now, Mr. Addington, where did most of the upland corn that was in competition with your prize corn at the Fair, come from?

A. I do not know, it was a state-wide competition.

Q. 100. All over Georgia?

A. From Georgia to Florida, North Carolina to Alabama.

Q. 101. And most uplands in Georgia are in North Georgia, in the section around you?

A. Well, there is upland down in middle Georgia, some upland, any land that is not bottom land is upland.

Q. 102. They raise more cotton than corn down there?

A. Yes sir.

Q. 103. And you do not raise any cotton?

A. One of my competitors, I have forgotten, I made special note of it, made one hundred and twenty bushels of corn on upland.

Q. 104. How much corn per acre did the man who took the second prize make?

A. I do not know.

Q. 105. About how many bushels?

A. I noticed in the paper.

Q. 106. Was your crop about like his or better than his?

A. Mine was better, I would not have gotten the prize.

1271 Q. 107. Was it much better, or how?

A. I do not know, but I know this, that the man mane 121 bushels, somewhere near that.

Q. 108. And you made 137 bushels?

A. One hundred thirty-six bushels, fifty-two pounds.

Q. 109. Do you know how much corn was made per acre, by any of your neighbors, who had the best corn, next to you, per acre?

A. I do not know.

Q. 110. Do you know who took the second prize in the Fannin County Fair?

A. A man by the name of Cochran, on Sugar Creek.

Q. 111. Where is Sugar Creek?

A. Near Blue Ridge.

Q. 112. And how much did he make per acre?

A. He made, the best I remember, somewheres near seventy bushels.

Q. 113. And yours was nearly twice as much as the next man to you?

A. I remember running it through my mind, I think I was 58 bushels ahead of the nearest competitor in the country.

Q. 114. That was on one acre that you raised 136 bushels of corn?

A. Yes sir.

Q. 115. On the other two acres, I believe, you said you raised about 75 bushels.

A. Seventy-five.

Q. 116. That was on the first planting, last year and after you had grown two corn crops.

A. Where I raised the 75 bushels was where I had planted potato-s, that was late corn.

Q. 117. Yes, after raising potatoes you put corn on the same land?

A. No sir, I planted the potatoes and then I planted the corn afterwards in every other row of potato-s.

1272 Q. 118. You planted your prize corn first?

A. Yes sir, I planted it May 21st.

Q. 119. Then you followed right after that on the other two acres of potatoes?

A. Yes sir.

Q. 120. Then, after the potato-s you planted two acres of corn after that.

A. Yes, but I did not take the potato-s out, I put the corn in just the same.

Q. 121. And that you say is on the Mountain?

A. On the south side of the ridge, where I live.

Q. 122. What direction is that from the plant of the Ducktown Sulphur, Copper & Iron Company?

A. Why, I would say it was right about south of east.

Q. 123. Right about South of East?
A. Yes sir.
Q. 124. And about how far in miles by the road?
A. Thirteen miles to the Tennessee Copper Co.
Q. 125. I mean from Isabella.
A. Isabella, I do not know.
Q. 126. About seventeen or eighteen miles, you would say?
A. I would say somewhere in the neighborhood of seventeen miles.
Q. 127. You saw some damage there last year?
A. Yes sir.
Q. 128. Was that on the first crop, or prize crop?
A. I seen some on that that I speak of, on the prize corn. I do not know whether it got anything or not, much but on my late potato crop.
Q. 129. Did it hit your late potato crop?
A. Yes sir.
Q. 130. What effect did it have on your potato crop?
A. It was dry and in need of precipitation, in bad condition and it affected that.
Q. 131. You made 120 bushels to the acre in spite of that?
1273 A. Yes sir.
Q. 132. How much would you have made, if it had not been for these conditions?
A. I would have made, this year, I averaged four hundred and ninety bushels per acre.
Q. 133. On the same land?
A. Yes sir.
Q. 134. About 490 bushels is what you would have made the year before?
A. The year before on the same land, I made four hundred ten and a half bushels.
Q. 135. And you put in a sworn claim for damages to the land and they awarded you the large sum of fifteen dollars?
A. The large sum of fifteen dollars.
Q. 136. How much did you file your claim for, as you remember?
A. I could- exactly recall. I never thought of it coming up any more, but I claimed that I was damaged in the neighborhood of.— I know I filed a claim with them when they came through that I was hurt somewhere in the neighborhood of eight hundred dollars and divided that half and half to the sulphur fumes.
Q. 137. You thought half of that was due to the sulphur?
A. Yes sir.
Q. 138. And you swore to that?
A. To the best of my knowledge, I did.
Q. 139. Now, then, your winning the prizes in the State Fair and in the Fannin County Fair, naturally attracted the attention to you as being the best upland farmer and has attracted the attention of people interested in farming, fertilizer and farming implements, and things of that sort?
A. No, I do not know.
Q. 140. And the Morris Fertilizer Co. wrote you a letter?

A. Yes.

Q. 141. Asking you to write them a letter?

A. No sir, I have no recollection of them asking me to
1274 recommend it.

Q. 142. What did they write you?

A. Asking for the photographs.

Q. 143. You naturally wrote a letter when you sent them in, complimenting the Fertilized?

A. Yes sir.

Q. 144. Now, Mr. Addington, as a farmer of years of experience, would not you say, would you say, that your marvelous growth of corn, on that acre of upland was,—which surpassed your nearest competitor in the same section by 58 bushels, was due to the advanced methods of farming you used, as much as the fertilizer?

A. That was a part of the reason.

Q. 145. I mean, all that goes to make up good farming, that is what it is due to?

A. Yes sir.

Q. 146. And it was not due to any particular local condition, but simply to the work?

A. No, no. I had the sorriest place in the whole country when I come there.

Q. 147. In other words,—I do not know whether I am using the right term or not,—do you call it forcing your land, what do you call it, scientific farming?

A. I plowed the land when it was dry enough to plow, and when it needed to be plowed, I did not plant my crop, the same kind of crop year after year on the same land. I would change patches, rotate, and then I plow, I subsoil and break it up that exposes for plant food anything that was not available otherwise, bring it up to the air and with that kind of treatment, I brought the land up.

Q. 148. And when you alternate your crop each year, the refuse from that crop would go as a fertilizer for the next?

A. Certainly, and I saved every particle of waste and tried to return as much to the soil as I take from it.

Q. 149. Yours was an exceptional crop for that section of
1275 the country?

A. Yes sir.

Q. 150. Was there much smoke over that section last summer?

A. I never noticed any, that I can call to memory, only it dropped in on me that particular time.

Q. 151. You were just noticing your own land?

A. Just watching my own land.

Q. 152. Was there a general complaint of smoke made over the country?

A. There always has been, ever since I came back from the West.

Q. 153. And that has continued on up to the present date?

A. Yes sir, I heard too much of it, I do not pay any attention to it.

Q. 154. You know this is a fact, Mr. Addington, that the smoke will come in to a place and settle down on the place, hit one spot,

and then a quarter of a mile over there some other land would be damaged, or maybe that distance away nothing would be damaged at all.

A. Sure.

Q. 154. Just where it hits is where it damages?

A. Yes sir.

Q. 155. And the coves in the ranges of the mountains that open toward the plant on the side that faces in the direction of the plant are very likely to injury, more so than the side further away, and facing the other way.

A. I have never studied it.

Q. 156. And when the wind is from the west in your section, it drops the smoke over on you?

A. No sir, rather from northwest.

Q. 157. A little north of west?

A. A little north of west.

Q. 158. What are the prevailing air currents in your country?

A. They vary anywhere from any old direction.

Q. 159. And when they are from a little north of west
1276 they bring it down there on to your place.

A. Yes sir.

Redirect examination.

By J. A. FOWLER, Esq.:

Q. 160. Mr. Addington, you say when your potato-s were injured by smoke, that it was about the end of a dry season?

A. During the dry season, I do not know whether it was the end of it or not, but during the dry season, along there somewhere the smoke struck them. I smelled the smoke, seen it, and seen the potato leaves crisp up that lay beside the prize acre. I never noticed it anywhere else, because I never watched it. I have enough to keep the weeds out of the corn.

Q. 161. That was after the dry season had been on for some time?

A. Yes sir, the dry season was on.

Q. 162. And by that time the leaves of the potato-s were drying up anyway, turning yellow?

A. Drying up, yes sir, but some of them has crisped.

Q. 163. I know, but were or not the leaves drying up before the smoke struck you?

A. No. No, it was the smoke, if anything was smoke, and if not, we have no smoke in that territory.

Q. 164. You say that was one time last year?

A. Yes sir, one time.

Q. 164. It struck your patch of potatoes and one piece of corn?

A. Yes sir.

Q. 165. It did not hit the balance of the stuff?

A. No, I did not observe it, if it did.

Q. 166. Whether it hit anywhere else in your neighborhood during the last year or not, you do not know?

A. No sir, I do not.

Q. 167. And where that came from you do not know?

1277 A. Well, we all supposed it come from the furnace, you know it smelled like it and looked like it, and as they said, it all came from there.

Q. 168. You do not know whether it came from the high stack or the other one?

A. I think it came from the high stack.

Mr. DRAKE: We except to that as a conclusion without facts stated to base it upon.

WITNESS: I have certain reasons why I would say that.

Q. 169. I wish you would give those reasons.

A. The first reason is, we used not to be bothered with smoke there before the high stack was built. The next reason, that stack throws the smoke into the upper layers of the air where they are carried over and dropped on to us. Where they are brought right down to us, that is the main reason.

Mr. HILL: We except to that as a conclusion and an answer to the whole issue involved in the case.

Q. 170. Are there any other reasons?

A. Those are the only two reasons I know of, I did not notice the smoke before the stack was built, I heard so much complaint before, and the other reason, is the altitude that it is at when it goes out of that stack, it will naturally drop up over there, then drop out on to the ground.

Q. 171. What was the name of that man who took the second prize?

A. I do not know his name, I do not know whether I ever heard of it, I just seen little sketches of it in the Constitution.

Q. 172. Where did he live?

A. In Georgia.

Q. 173. How far from the state line?

A. I do not know. I think it was in middle Georgia.

1278 Q. 174. No, I am talking about the man in Fannin County.

A. Oh, I thought you were talking about the State prize. He lives near Blue Ridge, on Sugar Creek.

Q. 175. What is his name?

A. Cochrane.

Q. 176. How far does he live from these furnaces?

A. I could not tell you.

Q. 177. Does he live as far as you?

A. No, I think not.

Recross-examination.

By LEON HILL, Esq.:

Q. 178. And, Mr. Addington, you do not mean to say that the smoke from the Ducktown furnace rolls out on to the ground, they have a stack, too.

A. That is my idea, you know what I mean.
Q. 179. Their stack is seventy feet high?
A. I do not know how high it is, it is not near so high.
Q. 180. You do not know anything about whether the Ducktown plant is located on higher ground than the Tennessee plant, do you?
A. No, I do not.
Q. 181. You do not know what the relative altitudes of the two stacks is, do you?
A. I do not.

Further deponent sayeth not.

——— ———.

Sworn to on this, the twenty-fourth day of June, A. D. 1914.

——— ———,
Deputy United States District Court Clerk.

The total distance traveled by this witness from his home to Knoxville, the place of giving his deposition, and return to his home was two hundred and sixty-two miles.

1279 STATE OF TENNESSEE,
County of Hamilton:

I, Chas. M. Fain, Notary Public, in and for said state and county, and stenographer, certify that the foregoing transcript is a true and correct, and honest transcript to the best of my skill and ability of my notes taken in shorthand.
This June 28th, 1914.

CHAS. M. FAIN. [SEAL.]

(Endorsed:) Supreme Court U. S. October Term, 1914. Term No. 1 Original. The State of Georgia, Complainant, vs. The Tennessee Copper Company et al. Evidence for the Defendant, The Ducktown Company. Filed June 30, 1914.

1280 S. M. BAIN, the next witness called, being first duly sworn, upon examination, deposed:

Direct examination.

By J. A. FOWLER, Esq.:

Q. Now what is your age?
A. Forty-five the fourteenth day of last January.
Q. 2. What position do you hold at the present time?
A. Professor of Botany, University of Tennessee, and Botanist of the Tennessee Experiment Station.
Q. 3. How long have you held the position of Professor of Botany at the University of Tennessee?
A. I was promoted to a full professorship in 1901, I think it was.
Q. 4. In that position as Botanist in connection with the Experi-

ment Station, are you in the employ of the United States Government?

A. Well, not directly.

Q. 5. What are your duties in connection with that position?

A. As Botanist, did you ask, or Professor of Botany?

Q. 6. Your connection with the Experiment Station.

A. Yes, my Experiment Station duties you referred to?

Q. 7. Yes.

A. Well, it is the investigation of various problems in connection with causes and prevention of plant diseases and answering inquiries relative to the diagnosis of plant diseases from specimens and
1281 various other questions of Botanical character.

Q. 8. What are your duties as Professor of Botany at the University?

A. Teaching the subject to students.

Q. 9. Are you the head of that particular branch of work in the University?

A. I am.

Q. 10. Where were you educated?

A. I got my common school education and equivalent to a college course, classical, at Eagleville School, in Rutherford County, Tennessee, and then I afterwards devoted practically all my time to the study of several different sciences, more particularly Botany. Most of my scientific work has been done without any teacher, independent study. I studied some at the University of Tennessee where I came as instructor in 1893.

Q. 11. Have you taken a degree from any school?

A. Yes, sir.

Q. 12. Which school?

A. 13. From the Eagleville School.

Q. 14. How long have you been engaged in the official study of Botany?

A. About twenty-four years.

Q. 15. State whether or not you have done any literary work in that line, especially in connection with experiment work.

A. In scientific literature, do you mean the writing of it?

Q. 16. I mean the writing of it.

A. I have some, yes.

Q. 17. What work have you done in that connection?

A. I have devoted my time principally to the investigation
1282 of two or three plant diseases, as a matter of scientific research, especially the effect of fungicides on peach foliage, with a view of controlling the brown rot of peaches. I investigated clover diseases, and in the course of the investigation discovered a new disease of clover in this state and devised a remedy to abate it. I have also written on a number of related subjects.

Q. 18. Have you made any special study of copper poison on leaves?

A. I have.

Q. 19. When did you make that special investigation, Professor?

A. It extended over a period from about 1895 to 1902, several

years of investigation, the experimental part of the research covering the three years from 1899 to 1901, and published a report on it.

Q. 20. What particular copper poisons did you especially study?

A. Well, I studied quite a number of compounds of copper, the special object of the experiments was to study the conditions affecting the Bordeaux mixture on peach leaves and studied the effects on other plants for comparison with that on peach.

Q. 21. How are those copper poisons, of which you studied, generated?

A. Well, the copper mixture that is applied on leaves is made by the diffusion of lime and a solution of copper sulphide, that is the mixture that is used in the control of plant diseases.

Q. 22. Are they used for spray?

A. Yes, sir.

Q. 23. Are you the Samuel M. Bain, who was the author
1283 of the bulletin of the Agricultural Experiment Station of the University of Tennessee, which is entitled "The Action of Copper on Leaves, with Special Reference to the Injurious Effects of Fungicides on Peach Foliage?"

A. I am.

Q. 24. In what year was that published?

A. 1902, I believe.

Q. 25. Can you state to what extent that was regarded as authority upon the subject?

A. Well, it is a standard work upon the subject, so regarded in this country and in Europe, and practically all the civilized countries as a material contribution to the subject.

Q. 26. I read you a sentence from Bulletin No. 287 prepared at the Geneva, N. Y. Experiment Station and will ask you if it refers to you.

"Bain's splendid work in laboratory and field shows not only that there are injurious effects from the use of copper compounds on the foliage of the peach, but the manner in which such injury is produced."

Are you the gentleman to whom mention is made there?

A. Yes sir.

Q. 27. Have you prepared any other bulletins besides the one I have shown you for the Department of Agriculture?

A. Yes sir, that is, for the Tennessee Experiment Station, and published quite a number of other scientific papers on related subjects.

Q. 28. Name some.

A. I have published; it will be hard to give the exact dates they were published, I have published one on Clover Diseases, which I referred to a while ago, in connection with my assistant, and a paper in 1895, entitled 'Anthracuose of Alfalfa and Red Clover,"
1284 and published a paper in connection with my assistant some time about 1907, I believe it was, on Selection for Disease Resisting Clover, and published a number of other papers, I cannot recall all of them.

Q. 29. Did you have any connection with the University Summer School at Athens, Ga.?

A. I lectured there two years ago this summer.

Q. 30. In 1912?

A. 1912.

Q. 31. I see under the list of officers or instructors for that year, the name of Samuel M. Bain, Ph. D. Lecturer, Professor of Botany, University of Tennessee, that is you?

A. That is correct, all except the degree, that was the mistake of the authorities at Athens.

Q. 32. Coming nearer the point, Professor, have you made any special study of the conditions around Ducktown, Tennessee, and in North Georgia, with reference to the smoke which has been emitted and is being emitted from those furnaces upon the foliage and vegetation, including the forests in that locality?

A. I have.

Q. 33. At whose instance did you made those investigations?

A. Of the Ducktown Sulphur, Copper & Iron Company.

Q. 34. About when were you first employed to make this investigation?

A. In September, Sept. 12, 1913, or 13th. It was the 13th I arrived there.

Q. 35. During what day did you do your first work?

A. It was from the 13th of September to the 22nd of September.

Q. 36. What did you do on those days?

1285 A. In company with Mr. Reese, I went through the forest properties Vestal principally, over a considerable portion of that territory.

Q. 37. Where are those properties located?

A. They are, I did not keep up especially with the location, I have my itinerary plotted on the map here.

Q. 38. Now, would you please file this map as Exhibit A to this Deposition?

A. I do so.

Q. 39. Will you explain your itinerary on that occasion?

A. Well, the first day, let me see, on Monday the 15th., I left Isabella, I believe and followed on the several dates the outline given here on this map. We came on down to Patterson Gap, following this route down here, that is, in Fannin County, down on the Jacks River, followed up and down the stream as marked on this map here, then made an extensive trip from the 19th to the 22nd. inclusive, left this Jacks River country, and from this trip up here, dropping across into the Tennessee Line a little way there, into Murray County, right down the old Federal Road, down by this point right down to Ellijay where I took the train for Knoxville.

Q. 40. Is that trip indicated by red lines on the map you have filed as Exhibit A?

A. Yes sir.

Q. 41. Did you on that occasion go over the entire route that is shown by those red lines, or just a portion?

A. Yes sir, this trip over here, was made at a subsequent date, that is, to Mineral Bluff.

Q. 42. Then is, or not the first trip illustrated by the red lines beginning at Isabella and ending at Ellijay and the lines lying on the left hand side of the map as you look at the map?

1286 A. Yes, sir, that is correct.

Q. 43. State what you did on that trip?

A. I made careful study of the condition of the foliage of trees and vegetation in general that I saw along the route and collected specimens and made photographs.

Q. 44. That was last year? In 1913, I believe you said.

A. Yes sir.

Q. 45. I wish you to describe the condition of the foliage at that time.

A. I saw no condition of foliage that would indicate any smoke injury. On the foliage I found various insect injuries, not many, some fungi, but nothing in the character of the foliage to indicate any damage by sulphur fumes.

Q. 45. Did you find any dead trees?

A. Yes sir.

Q. 47. How long did they appear to have been dead?

A. It would be difficult to say, in many instances.

Q. 48. Was it possible to state from what causes they died?

A. Not in every instance.

Q. 49. Did you see any unusual number of dead trees?

A. No.

Q. 50. Did you see any evidences of any other character of disease than appear in forests elsewhere?

A. No, not so far as I know.

Q. 51. Did you take any specimens of any kind on that trip?

A. Yes, sir.

Q. 52. What character of specimens were they?

1287 A. I got a few leaves of white pine, they were diseased, some leaves that were injured by insects, as Chestnut leaves, for instance, eaten by red spiders, with fungous disease on the Chestnut Oak, I believe it was.

Q. 53. Did you find any disease on the foliage that you could not account for, otherwise than having been produced by smoke?

A. No.

Q. 54. After a careful examination of these diseased leaves, were you pretty certain as to what the disease was?

A. That is, so far as anybody knows. So far as is generally recognized by Pathologists.

Q. 55. You took no borings from trees on that occasion?

A. No, I took some sections from trees, cut from land adjacent to this property.

Q. 56. Did you make a trip after that through that section.

A. Yes sir, that is, into North Georgia, after that.

Q. 57. When did you make the second trip?

A. The second trip was on the fourth day of October following, the fourth to eighth, inclusive.

Q. 58. Where did you go on that trip?

A. I went to the left of Isabella and went on the road indicated on the map there by the red line to the right,—wait, I am mistaken, about that date awhile ago. It was from the fourth to sixth, inclusive.

Q. 59. You mean that it was October, 1913, 4th to 6th?

A. Yes, sir. On that trip we went as far into Georgia as Blue Ridge, I believe,—let me see, Mineral Bluff,—Blue Ridge.

1288 Q. 60. How far is that from the State line, just give your best information.

A. It appeared to be about eight miles on a line.

Q. 61. How far is it from Copperhill?

A. It must be about eleven miles, air line.

Q. 62. What did you do on that trip?

A. It was very much the same character of investigation we had done on the former trip, examined the condition of vegetation and also making some color photographs illustrating the condition of foliage.

Q. 63. Had the frost fallen previous to that trip?

A. I think it had. I could not say to what extent the damage was, but I saw some frost in the region of Ellijay on the first trip.

Q. 64. What did you find the condition of the foliage to be on that second trip?

A. Well, it was nothing that might not be found in similar regions at the same time of the year.

Q. 65. Did you see any evidence whatever of any smoke damage to the foliage?

A. I did not.

Q. 66. Have you made a trip since that?

A. Yes, sir, let me see, I made a trip starting from Copperhill and to the #20 Mine, right at the point where Tumbling Creek crosses the State line, October 17th, to 20th, 1913.

Q. 68. Now what did you do on that trip, Professor?

A. Well, about the same character of work that I had done on the former trips, making more particularly a study of the growth of timber, the trees as affected by smoke as indicated by the thickness of the annual rings. I got some photographs showing the vegetation.

1289 Q. 68. By that time, were the leaves beginning to change color?

A. Oh yes, quite red, a good many of them falling.

Q. 69. Did they appear to be diseased any?

A. No.

Q. 70. State whether or not you saw any evidence of smoke damage on that trip.

A. Not on the leaves.

Q. 71. Did you find any evidences of any smoke damage during that year on the trip?

A. No sir, none on the foliage.

Q. 72. Have you made trips since that time?

A. Yes sir.

Q. 73. When?

A. On the 22nd and 23rd of January I left Ducktown and went up the Ocoee River, that trip is not plotted on the map.

Q. 74. How long were you there on that occasion?

A. You mean in Georgia; the 23rd and 24th, two days.

Q. 75. I suppose the foliage was all off the trees at that time.

A. All except the evergreens, of course.

Q. 76. Did you see any evidence of smoke damage on the evergreens?

A. None.

Q. 77. What did you do on that trip?

A. Most of the work was in taking of cores from trees to determine rate of growth.

Q. 78. Do you remember how many specimens you took?

A. I have from numbers 200 to 228, about twenty-eight,
1290 I believe.

Q. 79. From what kind of trees did you take them?

A. A number of different kinds, I have some on Post-Oak, Yellow Pine, Chestnut, Crab-Apple, Black-Jack, Spanish Oak, Birch and Willow.

Q. 80. Is that the last trip you have made there?

A. I made one trip into Georgia on the eighth of June of this year.

Q. 81. Of the present year?

A. Of this year.

Q. 82. Where did you go at that time?

A. I went from Copperhill across to the road leading from Copperhill to Pierceville, and on to Epworth and returned by the road leading over Rodgers Bridge.

Q. 83. What time of the day did you start out, on that trip?

A. We must have left Copperhill about seven o'clock, no, I beg your pardon, we left Ducktown at six by the Morgantown and Mineral Bluff Road.

Q. 84. What did you do on that trip, Professor.

A. We made several color photographs along the road and inspected the condition of vegetation, foliage, smoke damage particularly and collected a few specimens.

Q. 85. What time of the day did you get to Epworth?

A. To Epworth it must have been somewhere around eleven o'clock, I presume, I am not sure.

Q. 86. Had you taken your color photographs previous to that hour, eleven o'clock?

A. Previous to eleven o'clock,—let me see; yes.

Q. 87. What did you do in the afternoon?

A. We returned by the number 20 Mine and over the
1291 *bridge* at Rodgers Bridge.

Q. 88. Did you make a careful investigation of the foliage on that trip?

A. I did.

Q. 89. Both going and coming?

A. Both going and coming.

Q. 90. How many color photographs did you make?

A. I made on that trip, two, three, four, five, six, seven, eight, nine, ten, I make it ten.

Q. 91. Were all of those ten photographs made in Georgia?

A. One was just looking into Georgia across the State line at one of the gardens, right at the line.

Q. 92. And the others were all of points in Georgia?

A. Pardon me just a moment. I am not sure whether the state line runs with the River at Rodgers Bridge or not, I got one photograph right from the end of the bridge looking southward. I am not prepared to say whether that was in Georgia or Tennessee, I am under the impression it was on the other side.

Q. 93. Have you those photographs with you?

A. I think so.

Q. 94. Would you please file them as Exhibit- Nos. 1 to 10 to your deposition?

A. I do so, they are numbered 538 to 547 inclusive and I file them as Exhibits Nos 1 to 10 inclusive.

Q. 95. Will you please state briefly, Professor, what those photographs are?

A. My No. 538, that is, Exhibit No. 1 is the garden and house on a roadside right at the Georgia and Tennessee line, made on the eighth day of June last. It is known, I understand, as the Pig. Buck place. It does not show anything particularly except the Irish
1292 Potato patch on that place. My No. 539, Exhibit No. 2, is a general view of gardens, etc. in the small valley in Paintertown, about one-sixteenth of a mile from the Georgia line, and the distance from the Works is marked on the picture.

Q. 96. How far is that point from the furnaces?

A. That is three miles South of Isabella, one and one-half miles southeast of Copperhill.

Q. 97. Are those distances correctly stated on the label on each of these photographs?

A. I think so.

Q. 98. I mean the distance from the point the photograph was taken to each of those furnaces.

A. Yes, sir, I have been very careful, I do not think there has been any mistake. My picture No. 540, Exhibit No. 3 is the garden of J. H. Lee, which is the last point in Paintertown, showing the cabbage, onions, and other vegetables.

Q. 99. How far is that?

A. The same distance, practically, part of the same landscape.

Q. 100. The next.

A. My No. 541 Exhibit No. 4, is a garden along this road that we traveled that day. I did not learn the gentleman's name. Just off the road, about a mile and a half from Copperhill, making it about four and one-half miles south of Isabella, which shows cabbage, onions, beets, and several other vegetables. My No. 542, Exhibit No. 5 is a view of the forest taken from the road leading from Mobile, about one mile west of Epworth, near Fightingtown Creek, showing the timber growth of forest oak and other hard woods. My No. 543,

Exhibit No. 6 was a general view taken on the road from
1293 Epworth to Mobile, about a mile west of Fightingtown Creek and near the Mobile Creek that was two and one-half miles southwest of Copperhill and about five and a half southwest of Isabella, showing the general landscape. My picture No. 544, Exhibit No. 7, shows a house and dooryard of J. W. Patterson, in North Georgia, about five miles southwest of Isabella and two and a half miles southwest of Copperhill, it is not a very good picture, but shows the condition of vegetation quite well. My picture No. 545 Exhibit No. 8 is a garden at the same place, looking toward one corner of the house, showing beans, Irish potatoes, cabbage, rhubarb, sage, horseradish, etc. My picture No. 546 Exhibit No. 9 is a general view into Georgia, looking eastward from near the fork of the road leading from Copperhill to Pierceville, two miles west of Copperhill and six miles southwest of Isabella, showing the general condition of the trees and other plants. My picture No. 547, Exhibit No. 10 is a view taken at Rodgers Bridge on the Ocoee River, showing the residence of J. H. Rogers, this is three miles west of Copperhill and about five and a half southwest of Isabella.

Q. 101. Now, Professor, in addition to taking these photographs, did you make a careful inspection of the foliage?

A. I did.

Q. 102. Was it fully developed at that time?

A. I think so.

Q. 103. What was its condition?

A. Generally speaking, the condition of the foliage was good.

Q. 104. Did you see any evidence of injury from smoke?

A. I did.

Q. 105. Where was that?

1294 A. I saw some evidence of injury just at the river bank, at this bridge.

Q. 106. Was that in Georgia or Tennessee?

A. It was at the river there. I think it was on the Tennessee side, as I understand, but it was at the bank of the river.

Q. 107. What river is that, the Ocoee?

A. The Ocoee river, yes.

Q. 108. That is about where it changes its name, I guess, in Georgia, it is the Toccoa, at what particular point are you referring to now?

A. At Rodgers Bridge, that is the last point I spoke of.

Q. 109. Do you know, Professor, whether that is in Tennessee or Georgia?

A. No, not of my personal knowledge.

Q. 110. What was the nature and extent of the injury at that place?

A. I saw damage to beets and potatoes in the garden, also leaves of the Elder and Jerusalem Oak at the bank of the River.

Q. 111. Did it appear to be fresh damage?

A. Yes, comparatively.

Q. 112. What time of the day was it you saw that?

A. That was in the afternoon, must have been close to four o'clock.

Q. 113. Did — appear to have been done that day?

A. I could not say definitely.

Q. 114. Did you see any other evidences of damage by smoke on that trip?

A. Yes, sir.

Q. 115. Where was that?

1295 A. I saw some. I noted some not very far from where that photograph was gotten, my No. 540. Some injury to Maple shoots, the young shoots of the Red Maple, I think was not due to smoke, I am quite certain in fact, but just what it is. I have not been able to determine.

Q. 116. What time of the day did you notice that?

A. That must have been about, oh, all along the road wherever the tree occurs I saw it, from, it must have been eight o'clock, eight or nine, that was not fresh injury however, it had been done some time and the shoots were dried and blackened.

Q. 117. Can you state what kind of injury that was? Or what the disease was?

A. No, sir, I cannot.

Q. 118. State whether or not you are clear in your mind as to whether it was smoke injury.

A. I am quite sure it was not smoke injury.

Q. 119. What was the appearance of the diseased tree?

A. The terminal shoots, that is the buds, had died and blackened, and perhaps two or three leaves back of the bud were black and dried up and some of the tops of the leaves were somewhat injured.

Q. 120. Did you notice any other injuries or diseases on that trip?

A. Yes, sir, I noticed injuries to Blackjack Oaks, along the road not very far from Epworth, that is along the road from Copperhill to Epworth.

Q. 121. What was the nature of those injuries?

A. I think they were due to smoke.

Q. 122. Did they seem to be fresh?

A. Comparatively fresh.

Q. 123. Could you judge how long it had been done?

A. No, I could not say.

Q. 124. What time of the day did you notice that?

1296 A. It was perhaps about ten o'clock in the morning, it had not been done that day. It must have been done before that.

Q. 125. Now, that was about ten o'clock on the eighth?

A. Yes, sir.

Q. 126. Did you notice any other evidences of smoke injury? Just state all that you did notice.

A. I believe I spoke of some injury in gardens, one or two, mentioned already. I saw none that I can recall between Epworth and No. 20 Mine—Mobile Mine, it is, that I can recall. I made no note of such. There were some I believe—that is all I noted on that trip. In some instances, it was rather difficult to state positively whether

foliage was injured by smoke. I have stated that with reference to these injuries on oak leaves. In gardens, for instance, occasionally you will find potato leaves in a dying condition, and it was uncertain as to whether it was smoke or some fung-us disease, or due to drouth.

Q. 127. Please describe what effect the smoke has upon leaves.

A. It manifests itself differently on different leaves on the different species. In many instances it is impossible to distinguish smoke damage, for instance, from drouth, and the botanist approaches the question rather by elimination of injuries known to be due to natural causes due to the various fungi diseases, or the work of insects, and by association, or rather the conditions surrounding the suspected injury. For instance, in the case of the Maple I have recalled. That is one of the reasons why the Maple injury could not be due to smoke. In the first place, Maple is one of the most resistant species to the action of smoke and if you find other plants decidedly more sensitive associated with it and not damaged, you are safe in assuming that the Maple is not damaged by the fumes.

Q. 129. In the vicinity of those Maples, did you find any
1297 other vegetation appearing to have been affected by smoke?

A. Not in this region.

Q. 130. What is the peculiar appearance of the leaf which has been affected by smoke?

A. As it is usually observed, it is brown at first, it has brown areas. Some leaves brown up in spots and then the spots become white. In the cases of pine and conifers the family to which pines belong, the tips of leaves under the mild action of smoke, become slightly pale in color, then redden and then brown, so it depends upon what stage you see the injury.

Q. 131. State whether there are other diseases which give the leaves a similar appearance.

A. In many instances, that is, to the casual observer.

Q. 132. Have you, Professor, preserved any specimens which show the similarity in appearance between leaves affected by the sulphur fumes and those affected by other diseases.

A. Yes, sir.

Q. 133. Have you those specimens present?

A. Yes, sir. I have some certainly not due to smoke, and some taken in the Ducktown region last fall.

Q. 134. Professor, you hand me a specimen of leaves which you have numbered 96, are those the figures, the date and the card attached to it *appears* the date October seventeenth 1913. Where did you obtain these leaves?

A. 96, is it?

Q. 135. No. 96, yes.

A. Those came from along the roadside about two and one-half miles from Copperhill towards No. 20 Mine, the injury which I did not assign to smoke, but collected in that region.

Q. 136. Do you know whether or not it was claimed to have resulted from smoke?

A. I do not know, in this case.

Q. 137. Will you please file that specimen as Exhibit No.
1298 11 in your deposition?

A. I do so.

Q. 138. What is the difference, Professor, between the appearance of that leaf and leaf injured by the smoke disease.

A. Very much the same.

Q. 139. You have handed me specimen of leaf which you have numbered 98, bearing the same date as the other, where did you obtain this specimen?

A. My numbers are mixed on that, you had better not put that in—no, that is right. That is right. That is all right.

Q. 140. What is your answer?

A. This was taken not very far from that last specimen—let me see, now wait a minute.

Q. 141. Was that obtained on the same trip?

A. Same trip.

Q. 142. Did you know what disease these leaves are affected with?

A. It is drouth.

Q. 143. Did or not the sulphur fumes have anything to do with the condition of those leaves?

Answer. They did not.

Q. 144. Please file that as Exhibit No. 12.

A. I do so.

Q. 145. You have handed me Exhibit No. 88, the card attached to it bears the date of October 12th, 1913, where did you obtain that specimen?

A. Oct. 12, that came from the top of Chilhowee Mountain, in Blount County.

Q. 146. How far is that from the copper furnaces at Ducktown?

A. It must be eighty miles.

Q. 147. When did you obtain this specimen?

1299 A. That was on the 12th. of October, 1913.

Q. 148. Please mark this specimen as Exhibit No. 13.

A. I do so.

Q. 149. Were those leaves in the last specimen shown you diseased in any way?

A. None, I think, except by the drouth.

Q. 150. Is there any particular difference in the appearance of the last specimen and the other two specimens?

A. I could not find any. In the fresh condition the resemblance appears perhaps more striking than it is now in the dried specimen.

Q. 151. Had there or not been a drouth in that whole section of the country previous to the time you took these specimens?

A. I could not say.

Q. 152. Was it the dry season of the year?

A. It was the dry season of the year and the location was a dry one.

Q. 153. State whether or not, Professor Bain, those conditions,

the condition of these leaves may be due from want of moisture reaching the leaves.

A. From the roots, you mean?

Q. 154. Yes.

A. Well, that is what I mean by drouth effect.

Q. 155. Suppose there is a diseased condition of the root of the tree?

A. That would have the same effect.

Q. 156. Now suppose the forest fires have passed through that country, or something of that kind.

A. The same effect.

Q. 157. Anything that would prevent moisture from reaching the leaves through the fibers of the trees?

A. Yes, sir.

Q. 158. Professor you have handed me a specimen of
1300 Pine twigs, which appears to be numbered eleven, the card attached to that is dated September 16th, 1913, where did you obtain that specimen?

A. That is taken from a White Pine, which is in a sickly condition on the property of John T. Jones, Lot 186 in North Georgia.

Q. 159. How far is that point from the furnaces at Ducktown?

A. From Copperhill it is 11 miles, from Isabella, 14.

Q. 160. Do you know what was the matter with the Pine tree?

A. I think I do. That is, I think I know the disease, that is generally recognized.

Q. 161. What was that disease?

A. It is generally known as the leaf tip disease of the White Pine?

Q. 162. And by what is it produced?

A. It is unknown.

Q. 163. Is that disease found elsewhere than in that section?

A. It is.

Q. 164. Through what sections of the entire country is it found?

A. Throughout the eastern United States, reported from Massachusetts to North Carolina, on record as having been found over that section of the country.

Q. 165. How long has that disease been affecting the White Pine?

A. I cannot tell you, I do not think it is known.

Q. 166. How long have you known of it?

A. I never investigated it until I made this investigation about Ducktown.

Q. 167. Did you then make a careful study of that disease as found in the books?

1301 A. I did.

Q. 168. In many of them?

A. There are several authors on that subject. (The witness refers to a book.)

Mr. Drake: I object to the professor referring to any author to answer these questions.

Exception overruled and appeal taken.

A. There is a dry rot to the roots, and the blight recognized on White Pine.

Q. 169. What effect do these diseases have on the tips of Pine?

A. This leaf tip disease is the only one I am familiar with, the one that is affecting this specimen here.

Q. 170. I presume when the Pine is affected with the diseases you mention, the leaves all die?

Mr. DRAKE: I object to the Professor referring to authorities to answer these questions. If he knows independent of any authority, why of course we will not object, but if he refers to authorities I think the evidence *evidence* and should be put on the stand.

Exception overruled and appeal taken.

A. A tree affected by any serious disease, of course, suffers death in the leaves.

Q. 171. That is one of the first principles in the life of trees?

A. Not always, but a tree in a diseased condition will make its appearance in the leaves, that is one of the first symptoms.

Q. 172. And this peculiar disease you have mentioned, the tip disease is one in which the disease first appears in the tips of the leaves?

A. Yes, sir.

Q. 173. How do smoke fumes affect the life of the White
1302 Pine?

A. Very much the same way, that is, the early stages of the injury.

Q. 174. Will you file as Exhibit Fourteen, the specimen Exhibit No. 11, to which you have testified?

A. I do.

Q. 175. Have you any other specimens, Professor, showing the like effect upon Pine. If so, will you please present it?

A. Yes, sir, my No. 46, shows the same condition upon Pine leaves taken on the Road between Eton and Ellijay, in Georgia, within the Murray County line. I remember passing the County Line mark just before finding the specimen.

Q. 176. Was that specimen obtained at the same time?

A. On the same trip, that is, on the 21st of September.

Q. 177. How far was the point where you obtained that specimen from the furnaces at Ducktown?

A. I think it is about nineteen and a half miles, as I scaled it on the map.

Q. 178. Is there any difference in the disease of the two specimens?

A. None that I could detect.

Q. 179. Will you please file this specimen, your No. 46, as Exhibit No. 15?

A. I do so.

Q. 180. Did you notice White Pine or other White Pine than the one from which these specimens were taken which were affected the same way?

A. I have found specimens with the same diseased condition in Sevier County, as I found this tree.

Q. 181. Did you go into Sevier County to compare the foliage and appearance of growth there with the appearance and growth in the section you went through South of Ducktown?

1303 A. Yes, sir.

Q. 182. How many days afterwards?

A. It was on the 26th day of September, this was on the 21st, that was five days afterwards.

Q. 183. Was there any difference in the extent of the disease as manifested in Sevier County from its extent in North Georgia?

A. I did not go over enough territory to judge of its extent, but the conditions were just about the same.

Q. 184. What difference did you detect in the appearance of foliage in Sevier County from its appearance in North Georgia?

A. Well, the leaf tip trouble was especially marked in the Yellow Pine at Elkmont, in Sevier County, the point where I stopped. And then, I have found trees presenting the same pathological conditions in Blount County up in a little section known as Millers Cove. There is not very much of the White Pine at the point I visited in Sevier County, investigating the conditions.

Q. 185. And how far was that point in Sevier and Blount Counties from Ducktown?

A. Around eighty or ninety miles.

Q. 186. With reference to other trees, did you find a difference in the appearance of the foliage in Sevier and Blount Counties, than in North Georgia?

A. I found the evidence of frouth more severe in going along the railroad in Sevier County than any of the points in North Georgia where I visited. For instance, the Maples and other trees showed the drying of the foliage more severely in Blount and Sevier Counties than they did in Georgia.

Q. 187. Were there any other differences?

A. I found trees of what is popularly known as the Nigger Pine dying from attacks of the Beetle in Blount County very much more severely than any point in Georgia I visited. I made the note

1304 on that trip that I made in Blount County to that effect, that I had seen more dead pine trees in a distance of about five miles than I had seen in the whole trip in Georgia. I examined the trees at one or two points and found them being killed by this beetle, and others that I saw from the railroad presented the appearance of dying from the same trouble.

Q. 188. Then, Professor, as a whole, in which section did you find the most diseased and dead timber? In North Georgia, or Sevier and Blount Counties, Tennessee.

A. Well, I believe there has been more destruction by fire perhaps in the section I visited in North Georgia than there has been in the high mountains of Sevier County, where I,—well I do not know, there are perhaps,—there is no great difference possibly about the same.

Q. 189. Leaving the fire out of consideration and just considering the diseases to which the forests are incident to, where did you find the most diseased timber?

A. There was more that I could recognize in Blount County.

The hour of noon approaching, the further taking of this deposition was adjourned until two o'clock P. M. of this day.

Pursuant to adjournment, the further taking of this deposition was resumed at 2 o'clock P. M. on this the 22nd day of June, 1914, at the same place and in the presence of the same parties.

1305 Q. 190. Have you taken any color photographs of conditions which you found in Blount County?

A. I have.

Q. 191. How many have you with you?

A. Three, I believe.

Q. 192. Are these all that you took?

A. 649, 50, 51 and 53,—I have four, I believe—wait a minute, there is another one still on the strip I took six altogether, I believe.

Q. 193. You took six photographs in that County?

A. Yes sir.

Q. 194. For what purpose did you take those photographs?

A. I took one, I remember illustrating the general conditions in the high mountains of Hemlock timber.

Q. 195. Which one was that?

A. That is my number 56.

Q. 196. What is the answer?

A. I took one illustrating the Hemlock forests under the best of conditions in the mountainous section. I took one illustrating the top dying of Chestnut trees, one *one* illustrating the dying of pine trees, one I spoke of before. I mentioned one about the dying top of Chestnut and also the dying of White Pine by apparently the same trouble that exists in the Ducktown region of North Georgia. I should say, I have two of them.

Mr. DRAKE: We object to that answer as being indefinite and a conclusion.

Exception overruled, and appeal taken.

A. (Continued:) And one of Birch trees showing the top dying.

Q. 197. Did you develop all six of those photographs?

A. I did.

Q. 198. How many have you present with you?

1306 A. I think I have them all.

Q. 199. I hand you your photograph No. 49 what was that intended to represent? And please file same as your Exhibit No. 16.

A. I file the same as Exhibit No. 16 to my deposition. That shows on the left of the picture two freshly dead pine trees, popularly known throughout this section as the Nigger Pine, from the beetle referred to in the former answer.

Q. 200. I show you your photograph No. 50, what does that represent, and please file it as Exhibit No. 17.

A. That represents the top dying of the Birch Trees near my summer house at Elkmont in Sevier County, Tennessee.

Q. 201. Sevier County, Tennessee?

A. Yes, sir, illustrating what I believe to be a purely physiological condition resulting from the clearing of the forest.

Q. 202. Did you find anything of that kind in the Ducktown region of North Georgia?

A. I did not find much on the birch, but on the Chestnuts more particularly I did.

Q. 203. I show you photograph No. 51, state what that is and file it as Exhibit No. 18.

A. I do so, I file same as Exhibit No. 18. This represents in the immediate foreground, two White Pines just below Wonderland in Sevier County, Tennessee, dying exactly with the same symptoms as I found the trees observed in North Georgia which are referred to.

Q. 204. I show you photograph No. 55, state what that represent- and file it as Exhibit No. 19.

A. I fine same as Exhibit No. 19. This is another view near the last, showing the White Pine dying of the same symptoms. In this group I remember seeing about twelve Pine trees in a dying condition and mixed in with them is a Hemlock in perfect state of health.

1307 Q. 205. I show you photograph No. 56, state what that represents and file it as Exhibit No. 20.

A. I do so. That represents a view of one of the mountain slopes near Clingman's Dome, at an altitude of perhaps 3,500 feet, perhaps 4,000, showing the Hemlock in as good condition as I found it anywhere in the Mountains of this section.

Q. 206. In what particular locality is that?

A. About 6 miles east of Elkmont on Little River in Sevier County, near the North Carolina line.

Q. 207. That picture is taken to show the forest in good condition?

A. Good condition. It is quite a moist climate and before any timbering was done, fires were not apt to break out.

Q. 208. How far was the point represented in that photograph from these other photographs?

A. It is about the same distance I suppose as these other points, about eighty or ninety miles.

Q. 209. You do not catch what I mean, how far is this point from these other points?

A. That is about, possibly eight miles.

Q. 210. I show you photograph No. 57, state what that represents and file it as Exhibit No. 21.

A. I file same as Exhibit No. 21. That represents the top dying of Chestnut trees near this same point where—well, it is near Elkmont, Sevier County, Tennessee. That picture was gotten on the twenty-eighth day of September last year. That represents the top dying of Chestnut trees, as I interpret, from the lack of water caused by forest fires, or improper lumbering, and sometimes apparently from purely physiological causes.

Q. 211. Could you tell whether or not, Professor Bain, from your observations, whether or not the forest had been burned off from time to time through the North Georgia section?

A. Yes sir, it showed evidences of fire during the years
1308 past over this section.

Q. 212. What were the evidences of fire?

A. The scalded trunks of trees and occasionally tracts where the trees were apparently burnt over and dead, the most reliable evidence from the field study of the fires is from the scalds on the trunks of trees, I have an exhibit later that will show how we may tell the dates of these fires.

Q. 213. Was there very much underbrush throughout that section?

A. Not a great deal.

Q. 214. What effect do the fires have on small growth and underbrush?

A. It is likely to kill it.

Q. 215. State whether or not there is a considerable territory around Ducktown there which is barren of trees.

A. Yes, sir, a considerable area.

Q. 216. When you were there last fall, did they have any growth upon it at all.

A. Right near the works, it has no native growth, then as you go out you will see within a certain radius certain grasses that appear on the leeward side of the ridges as you go on forward from the works in every direction the conditions improve.

Q. 217. Is there any kind of grass which had grown on it and was then standing?

A. Yes sir.

Q. 218. What kind of grass is that?

A. More generally what is known as Sage Grass.

Q. 219. About how high was it?

A. About waist high. On the first trip that I made to Ducktown, I took a walk out from Isabella towards Park Mountain, and picked up on that one walk, in one afternoon, some sixty species, for the most part native plants.

1309 Q. 220. Did they seem to have been growing pretty well during the summer?

A. Well, some were and some were not. Generally where they were suffering for water they did not grow as well, perhaps certainly not as well as they would do in other sections. I found a number of grasses, sage grasses more particularly, seemed to grow as well as anywhere.

Q. 221. Did you find any of these species that seemed to have been damaged by sulphur fumes?

A. I did not see any evidences at all, of injured foliage, except in the case of one Jimpson Weed, I remember to have noticed which seemed that it possibly might have been injured by smoke within a distance of a mile from the Isabella plant, on that particular trip.

Q. 222. In what direction is that from Isabella?

A. I think, if I remember, a little northnorthward.

Q. 223. How far is that from the Tennessee Company's plant?

A. About four miles, I may state, however, that you ask me if I

see any evidence of any damage to foliage. I was telling you exactly what I saw. I did not attribute that injury last fall to smoke damage. I saw the same thing, I thought at the time it was smoke damage, but I saw the same thing out in the country from Knoxville here a few days later on the Sequoyah, that I was rather surprised to see it.

Q. 224. You thought that one *Sequoyah* Weed was damaged by smoke when you saw it, at the time?

A. Yes sir, at the time.

Q. 225. Did you observe plants when you came to Knoxville?

A. I have made several trips into the fields about Knoxville for comparative study.

Q. 226. Did you or not find similar conditions existing on plants in or near Knoxville?

A. I did, on the *Sequoyah* Weed.

1910 Q. 227. Do you know what that disease was?

A. I did not, I did not investigate it very thoroughly.

Q. 228. Was that the only plant which you saw which was diseased, and which you attributed its diseased condition to the smoke fumes?

A. I was at the Staff House of the Tuckaseee Sulphur, Copper and Iron Co. and saw some plants, I do not recall now what they were, that showed a little injury to the foliage. I was not sure that that was smoke, but I supposed it was.

Q. 229. How close is that to the plant?

A. I think that is—I am not sure, that is right.

Q. 230. Well, feet or yards?

A. I do not think it is over a quarter of a mile.

Q. 231. State whether or not you made a careful inspection of the plant growth in that immediate section, right close to the furnaces.

A. I did.

Q. 232. And were not those the only evidences of smoke damage you saw?

A. The only ones I found. Those are all I recall.

Q. 233. And you say you examined about sixty species?

A. Yes, I found about sixty species of native plants in the region, during this one walk that I took.

Q. 234. Was that the only time you ever made an investigation right in that immediate vicinity, to see whether or not the fumes were having any effect on the plant growth?

A. No, I watched for it every time I have gone to Tuckaseee, on several separate trips.

Q. 235. During last fall, up to the eighth of June, of the present year, did you find any other evidences than those you have mentioned of smoke damage in that vicinity?

A. Nothing that could be with any degree of certainty attributed to smoke.

1911 Q. 236. I was asking you a minute ago about the sage grass, what could be the effect, Professor upon burning that growth of sage grass that you saw there, on the small shrubs and

22—J

plant growth, and the growth of different trees that were coming up?

A. Well, it would very likely kill out the young growth of trees, saplings.

Q. 237. Then, to what did you attribute the fact that it is practically barren of growth in the different sections immediately around the furnaces there?

A. Immediately around them?

Q. 238. Yes.

A. Well, the evidence is that some of the growth was cut away, you mean the trees?

Q. 239. Yes sir.

A. Well, some were cut down occasionally, cut stumps would be seen, and of course there is no doubt, from the inspection of the region, that smoke has killed out vegetation immediately surrounding the works.

Q. 240. Suppose that those acid plants were put in there from two to six years ago, had taken care of all the acid, and of all the poisonous matter that emitted in the fumes, state whether or not tree growth would have resumed on those barren lands around there to any appreciable extent by the present time.

A. I do not think it would. I—how long did you say?

Q. 241. From two to six years.

A. In those stages a tree would make a very little growth, in two to six years, as the condition of the country there is such, the land is badly gullied, and very little soil left to support the growth.

Q. 242. And then would or not the burning off the grass have the effect of killing it?

A. And the burning off of the grass would of course kill out the seedling trees, or have a tendency in that way.

1312 Q. —. Did you or not on the eighth day of this month take a number of photographs of grasses and trees growing around homes, etc., and in the vicinity of these furnaces?

A. I began that work on the fifth.

Q. 243. I show you photograph No. 501, please state what that represents, and file it as Exhibit No. 22.

A. This is a color photograph that I got on the fifth day of June, 1914. It is a general view of a portion of Ducktown showing the residences principally the peach trees scattered through there.

Q. 244. I show you photograph No. 502, state what that represents and file it as Exhibit No. 23.

A. That is another view of the Town of Ducktown, I got that on the same date as the last, looking about, maybe East, from the point where I was standing.

Q. 245. Are these memoranda upon the labels of each one of these photographs correct?

A. So far as I know. I went over them very carefully and checked up very carefully each one.

Q. 246. I show you Photograph No. 503, please state what that represents and file it as Exhibit No. 24.

A. That is another view, showing in the foreground beans grow-

ing in a garden inside of Ducktown and Cherry and Peach Trees just across the street.

Q. 247. I show you photograph No. 504, please state what that represents and file it as Exhibit No. 25.

A. 504 is a view of these same bean plants in the same garden as shown in No. 503 at close range, taken a few minutes after the other. I file same as requested.

Q. 247. I show you photograph No. 505, state what that represents and file it as Exhibit No. 26.

A. That is the peach orchard of John George H. Dodd and W. S. Maughan, in Ducktown showing two cherry trees in
1313 front of the house and peaches to the left. I file same as requested.

Q. 248. I show you photograph No. 506, explain what that represents and file it as Exhibit No. 27.

A. That is another photograph showing the peach trees, corn, cabbage and other plants in Ducktown. That is on Mrs. Mills' place. I file same as requested.

Q. 249. I show you photograph No. 507, explain what that is and file it as Exhibit No. 28.

A. That is peach trees on Mrs. Nankevill's place in Ducktown, showing Mr. Reese to the left of the picture.

Q. 250. I show you photograph No. 508, explain what that represents and file it as Exhibit No. 29.

A. That is another view showing the peach trees, grass etc. in Ducktown, showing Dr. Spargis' place to the left of the picture. I file same as requested.

Q. 251. I show you photograph No. 512, what does that represent, and please file it as Exhibit No. 30.

A. Some more peach trees on Mrs. Yother's place in Ducktown, just back of the Ducktown Hotel. I file same as requested.

Q. 252. I show you photograph No. 513, what does that represent and file it as Exhibit No. 31.

A. That is another view of Mrs. Nankevill's place taken from a spot in Dr. Spargis' lot in Ducktown. I file same as requested.

Q. 253. I hand you photograph No. 514, explain what that represents and file it as Exhibit No. 32.

A. That is another view of Mrs. Nankevill's place with Mr. Reese's front yard in the foreground, showing peach trees, grasses and other plants in Ducktown, I file same as requested.

Q. 254. I hand you photograph No. 515, please explain what that represents and file the same as Exhibit No. 33.

1314 A. That is the garden of Columbus Pitman, in Ducktown, showing beans, tomatoes, pepper, beets and corn. I file same as requested.

Q. 255. State whether or not beans are susceptible to the effects of copper fumes?

A. They are.

Q. 256. Is or not the bean plant a rather tender one?

A. Rather tender.

Q. 257. How are tomatoes?

A. Well, they are more so.

Q. 258. I hand you picture No. 515, state what that represents and file same as Exhibit No. 34.

A. This shows two tomato plants in the foreground taken at close range in the garden of Columbus Pitman, nearer view of some of the last picture. I file same as requested.

Q. 259. I hand you photograph No. 517, state what that represents and file it as Exhibit No. 35.

A. That is another view of Ducktown, showing the Locust Trees on the left of the middle foreground and peach trees in the background. I file same as requested.

Q. 260. I hand you photograph No. 521, please state what that represents and file same as Exhibit No. 36.

A. That is the back yard and the veranda of Captain Nolde's house, not over three-sixteenths of a mile from the Ducktown Sulphur, Copper & Iron Co.'s smelter, showing the growth of vines and various plants in the back yard. I file same as requested.

Q. 261. I show you photograph No. 522, please state what that represents and file same as Exhibit No. 37.

A. That is a general view of the house of Captain Nolde, taken from a little greater distance and the end of the house to the left, directly in the foreground, is exposed directly to the air currents from the smelter, three-sixteenths of a mile away.

1315 Q. 262. There seems to be a barren hill immediately behind that, what kind of soil is that?

A. What kind of soil?

Q. 263. Yes.

A. Well, I do not believe I can quite answer that. It is not, it has been denuded, it is not well, in fact there is not enough soil there to start vegetation, but just what character of soil I do not feel competent to state.

Q. 264. Do you know whether it will produce grass at all?

A. I do not think there is any doubt about grass there, if the soil will hold it, there is grass, Bermuda Grass growing in the yard just below.

Q. 265. Is there sufficient strength in the soil to produce grass?

A. I think not.

Q. 266. Back beyond that barren hill, what appears in the picture?

A. You mean in the far background?

Q. 267. Yes.

A. That I believe is Little Frog Mountain, but I am not sure as to the direction.

Q. 268. State whether or not it is covered with growth.

A. It is covered with trees, you can see faintly in the distance.

Q. 269. How far is that away?

A. I cannot tell exactly how far that is, except by the map.

Q. 270. Well, it is not necessary to be exact.

A. That must be towards Pack Mountain, not over two and one-half miles, I think, yes, I am certain about that.

Q. 271. I show you photograph No. 523, explain what that represents and file same as Exhibit No. 38.

A. That is the house and orchard of Parker Henry about
1316 one and a half miles southeast of Isabella and in the foreground are peach trees and the dwelling. I file same as Exhibit No. 38.

Q. 272. I hand you photograph No. 524, please state what that represents and file it as Exhibit No. 39.

A. This is a view of the same house as in the last picture, that of Parker Henry, showing potatoes in the foreground, with peach trees to the side. I filed same as requested.

Q. 27-. State whether or not there was at that time grass growing on the hill immediately behind that house.

A. In the background?

Q. 274. Yes sir.

A. Yes sir.

Q. 275. I hand you photograph No. 525, please state what that represents and file same as Exhibit No. 40.

A. This is the front view of the house and orchard of John Quinn, about one and three-fourths miles southeast of Isabella, and one and one-quarter miles northwest of Copperhill. I file same as Exhibit No. 40.

Q. 276. I show you photograph No. 526, please state what that represents and file same as Exhibit No. 41.

A. That is a rear view of the same house which was shown in the last, of John Quinn, showing the cabbage and peach trees. I file same as requested.

Q. 277. I hand you photograph No. 551, please explain what that represents and file the same as Exhibit No. 42.

A. That shows the garden and house of S. E. Trentham, at the base of Pack Mountain, showing beans, potatoes, cabbage, tomatoes and beets, also Locust Trees and other forest trees about the dwelling. I file same as requested.

Q. 278. I show you photograph No. 552, please state what that represents and file same as Exhibit No. 43.

A. That is a view taken just about three hundred yards
1317 from Trentham's house looking southward from the base of Pack Mountain, up the Mountain with the landscape in the foreground showing grasses and other plants with trees in the foreground. I file same as requested.

Q. 279. I show you photograph No. 553, please explain what that represents and file same as Exhibit No. 44, to your deposition.

A. This is another view looking eastward towards Pack Mountain, the camera being set not very far from the last point, showing the same landscape of the Mountain background. I file same as requested.

Q. 280. I show you photograph No. 554, please explain what that represents and file same as Exhibit No. 45.

A. This is the house and premises of A. F. Burger, showing a view taken northwardly toward Pack Mountain. The location of the camera is noted on the label. I file same as requested.

Q. 281. I hand you photograph No. 556, please explain what that photograph represents and file same as Exhibit No. 46.

A. This is a view looking east of Pack Mountain from the residence there near the Bethlehem Schoolhouse, which is in the distance. I file same as Exhibit No. 46.

Q. 282. I show you photograph No. 558, please explain what that is and file same as Exhibit No. 47.

A. That is another view of Pack Mountain, on top of the hill in the middle foreground is Dave Bell's peach orchard. I file same as requested.

Q. 283. I show you photograph No. 559, state what that represents and file same as Exhibit No. 48.

A. That is the residence and orchard of the General Manager of the Ducktown Sulphur, Copper & Iron Co. and the location is given on the picture. I file same as requested.

Q. 284. I show you photograph No. 557, state what that represents and file same as Exhibit 49.

1318 A. That is the orchard of Martin Collins, one and one-half miles northeast of Isabella and five and one-half miles of Copperhill. I file same as requested.

Q. 285. I show you photograph No. 561, state what that represents and file same as Exhibit No. 50.

A. That is the residence and part of the yard of the Assistant General Manager of the Ducktown Sulphur, Copper & Iron Co., the distance is noted on the label. I file same as requested.

Q. 286. I show you photograph No. 562, please state what that refers to and file same as Exhibit No. 51.

A. This is the residence of the Engineer of the Ducktown Sulphur, Copper & Iron Co., Mr. Taylor, I believe. I file same as requested.

Q. 287. Now, state whether or not part of the vegetation which appears in the various pictures filed by you, give any evidences of injury from smoke fumes or any other diseases.

A. Well, it would be hard to state of course, at any great distance from the camera, but the general aspect of vegetation in these pictures is faithfully represented by the pictures.

Q. 288. State whether or not it was your intention, or your effort, on that occasion to give a faithful reproduction of the conditions as they existed in the vicinity of the furnaces.

A. I did.

Q. 289. And state whether or not these pictures were taken at a point lying in such direction from the furnace that the winds would carry the smoke or fumes, if any were emitted from the furnaces, over these points.

A. You mean these in the immediate vicinity of the smelters, or general.

Q. 240. All of these that you have shown here.

A. They were taken at points of various exposures, some

1319 of course, I do not know the general trend of the air currents in Ducktown, nor have I been in the fiend enough there to see, but the general effort was made to represent the vegetation as it looks.

Q. 241. And do they, as a matter of fact, give a faithful reproduction of the condition there at that time?

A. I think they do.

Mr. DRAKE: I except to the answer on the ground that the Professor states that the does not know the course of the air currents in that country and therefore could not state anything on which to base that opinion.

Exception overruled and appeal taken.

Q. 242. Professor, have you taken photographs of forest conditions elsewhere than in the North Georgia region and around Ducktown?

A. I have.

Q. 243. For what purposes were those photographs taken?

A. For the purpose of comparing conditions with those existing in the Ducktown region.

Q. 244. When did you take your first photographs of that kind?

A. I believe the first trip was February 21st to 23d, let me see, to be sure, That is right. (Examining notes.) February 21st to 23d of this year.

Q. 245. Did you or not also take some in March?

A. Yes, sir.

Q. 246. In what general section of the country did you take those photographs?

A. I took some in the—what is known as the Cumberland Plateau region in Tennessee, and also some in Western North Carolina, along the line of the Carolina, Clinchfield & Ohio Railroad.

Q. 247. State whether or not there are any furnaces of the
1320 character of these furnaces within fifty or seventy-five miles of the points where these photographs were taken.

A. No sir, not that I know of.

Q. 248. Do you know of any furnaces nearer than the Ducktown Furnaces?

A. No, sir.

Q. 249. I show you photograph No. 409, state what that represents and when it was taken and file it as Exhibit No. 52, to your deposition.

A. That picture was made on the 13th of March of this year near Monterey on the Cumberland Plateau, in Tennessee.

Q. 250. In what County is that?

A. I am not sure.

Q. 251. Putnam, or was it Overton?

A. No, it is,—about half way between Nashville and Knoxville on the Tennessee Central Railroad.

Q. 252. I show you photograph No. 425, explain what that represents and file it as Exhibit No. 53.

A. This photograph was gotten on the 14th of March of this year at Wilder, Tennessee, some distance north of Monterey. I file same as requested.

Q. 253. Do you know whether or not that point is in Putnam County?

A. I do not remember.

Q. 254. What is the trouble with the timber shown in that photograph?

A. There are Chestnut trees, Hemlock trees, more particularly, that are dying, very generally, in that region which shows along the skyline very clearly, a number of dead trees.

Q. 255. Did you examine it with sufficient care to form any idea about what were the diseases that they were dying of?

A. No, not at this point. I did one or two other points.

1321 Q. 256.. What was the trouble with the forest in your photograph No. 409, which you have filed as Exhibit 52 to your deposition.

A. This was,—wait a minute (referring to notes)—this was a view gotten near Monterey, showing dead Chestnut trees mixed in with the other timber. The chief trouble in this immediate region was with the Chestnut. It was dying very generally, in fact th- tree threatens almost to be exterminated in the region, for instance right near this point where this picture was made I counted eighteen Chestnuts dead in one place of not over a half acre, some of them on the ground and some standing.

Q. 257. I show you photograph No. 426, state what that represents and file same as Exhibit 54.

A. That is another view taken at Wilder, Tennessee, on the Cumberland Plateau, showing the condition of the forest at that point and the down timber. I file same as requested.

Q. 258. What is the matter with the timber shown in that photograph?

A. I could not say in that immediate region, I did not stay long enough to make an investigation.

Q. 259. What varieties of timber were dying there?

A. At that point, principally Chestnut and some Hemlock.

Q. 260. I show you photograph No. 358, state what point that represents and file same as Exhibit No. 55.

A. This photograph was made February 22d, near Lansing, Tenn., a few miles north of Harriman, in the Cumberland Plateau region, and shows many dead trees, Hemlock especially. I file same as requested.

Q. 261. Did you study that timber sufficiently to know with what disease it is affected?

A. There was evidence of fire damage in part of the picture towards the background more particularly. I did not have time to go to the top of the hill at that point, but examined others

1322 down nearer in that view and found they were not all killed by fire.

Q. 262. I show you photograph No. 360, state what point that represents and file same as Exhibit No. 56.

A. This is a view not very far from picture 358, and shows dead Hemlocks in the background and in the central foreground a Hemlock just about dead from the attack of an insect. The bark has been removed from this tree by birds in search of the larvæ of insects. I file same as requested.

Q. 263. I show you photograph No. 363, state where that picture was taken and file same as Exhibit No. 57.

A. This photograph was made not far from Lansing and it shows especially dead Hemlock trees in the background, especial attention is directed to two of these trees with dying tops, resembling smoke damage, to those trees in the region of the smelter fumes.

Q. 264. How far is that p-int from the furnaces?

A. Of Ducktown?

Q. 265. Yes.

A. It must be two hundred miles, I do not know, It must be one hundred and fifty.

Mr. DRAKE: Where did you say that was?

A. A few miles north of Harriman.

Q. 266. Do you know of what disease these Hemlocks were dying?

A. They were undoubtedly dying from the insects I found in these trees, I could not tell what they were.

Q. 267. I show you photograph No. 364, please state where that was taken, and file it as Exhibit No. 58.

A. This was taken a few hundred yards from the last view, 363, showing the dead and dying White Pine.

Q. 268. State whether or not you took some pictures in the Blue Ridge during the month of April of this year.

1323 A. I did.

Q. 269. Were they photographs, color photographs, or just ordinary photographs?

A. Just ordinary photographs.

Q. 270. I show you photograph No. 486, state where that was taken and file as Exhibit No. 59.

A. This picture was made about two miles from Altapass, N. C., and shows a hillside or forest with a considerable number of dead trees. I file same as requested.

Q. 271. Do you know what was the matter with those trees?

A. I do not. I can say they had not been killed by fire, they were principally Chestnuts at this point and the indications were that they died from the same cause that has caused the destruction of Chestnut timber in the Cumberland Plateau region.

Q. 272. What is the *distance* that has within the last few years attacked the Chestnuts throughout the Cumberland Plateau and the Southern Mountains generally?

A. I do not know.

Q. 273. Have you made any special study of that disease?

A. I have not.

Q. 274. Do you know whether or not it has been yet ascertained by specialists what that disease is?

A. So far as I know it has not in this immediate section.

Q. 275. Is there or not at present a special study being made by scientists?

A. There is a disease very destructive to the Chestnut over the north known as the Chestnut bark fung-us disease, but so far as

known it has never reached this far south, it has done great destruction.

Q. 276. So far as you know, that is really the same disease as this?

1324 A. It is as far as I know.

Q. 277. I show you a photograph, No. 487, state where that picture was taken and file it as Exhibit No. 60.

A. This was taken about two miles from Altapass, N. C. and shows dead timber in the forest mixed with living trees at this point, there is some Oak, as well as Chestnut dead.

Q. 278. Dod you know of what disease these Oaks died, did you make any study of it at all?

A. I did not, no.

Q. 279. I show you photograph No. 488, please state where that was taken and file it as Exhibit No. 61 and explain what it illustrates.

A. I file it as requested. This was taken on the railroad towards Marion, N. C., from Altapass, showing dead timber up the mountain side, Yellow Pine, as well as—well mostly Yellow Pine, that was dead in this view, it does not show distinctly.

Q. 280. Did you make sufficient study of these Pines to form any idea as to the diseases with which they died?

A. I did not.

Q. 281. I show you photograph No. 489, where was that taken and what does it illustrate, file it as Exhibit No. 69.

A. I file it as requested. That is at another point up there, two or three miles, or several miles in the direction towards Mation, from the last, showing dead Chestnut trees in the foreground.

Q. 282. I show you photograph No. 490, where was that picture taken and what does it show and file it as Exhibit No. 63.

A. I file it as requested. It was gotten along the same railroad, about a mile further from the last, showing dead Chestnut trees particularly in the forest.

Q. 283. I show you photograph No. 492, where was that photograph taken and the point situated shown in that photo-

1325 graph and file same as Exhibit 64-A.

A. That is in North Carolina about a mile before reaching Lynnville Falls, along the same road, showing dead trees in the forest. It does not show all that are there, but they are indicated in the picture by the lighter color of the dead trees.

Q. 284. What kind of trees?

A. These were principally Chestnut.

Q. 285. I show you photograph No. 493, where was that picture taken and what does it show, and file same as Exhibit 64-B.

A. It was about a mile north of Avery, N. C. on the same trip, and shows White Pine dead.

Q. 286. Did you study those pines with sufficient care to reach any conclusion as to what killed them?

A. I found a whole batch of these trees killed evidently by fire,

but no fire in the foreground of the picture. I examined sufficiently to see that they died evidently from some natural cause.

Q. 287. I see dates on the labels of the various photographs, what does that date represent?

A. That represents the date on which they were taken.

Q. 288. How far are the points in North Carolina where these various photographs were taken from the furnaces of the Ducktown Copper Company and the Tennessee Copper Co.?

A. It must be at least two hundred and twenty-five miles, on an air line.

Q. 289. State, Professor, what was the relative condition of the forest in North Georgia south of the State line near the furnaces of the Companys and extending on down through Fannin County, and the forests on the Cumberland Plateau and around Altapass and other points in North Carolina examined by you?

A. Judging from the existence of recently dead trees, from the standing dead timber, the condition of the forests in North
1326 Georgia is healthier than it was over these sections in many cases. For instance, going from Johnson City to Altapass, you go along for a few miles and the forest would be in relatively good condition, and then you would get to sections where the trees were dying on a large scale. In the Cumberland region, White Pine and the Hemlock and the Chestnut are on the whole decidedly in a worse condition than they are in the region of North Georgia where this timber occurred, where I saw them for study.

Q. 290. State whether or not there are many insects, which injure, although they may not kill the growth of trees.

A. There are, yes, you mean the number of species.

Q. 291. Yes, I mean the number of species of insects.

A. Well, there is a considerable number.

Q. 292. Do you know whether or not a very small per cent of sulphur fumes in the atmosphere would have a deleterious or beneficial effect upon the growth of vegetation in the forest?

A. Well, it depends, of course, upon the condition surrounding the forest trees. In general, the effect of sulphur fumes should be injurious.

Q. 293. Suppose there was a very slight per cent of sulphur fumes in the atmosphere. Would that be injurious?

A. Well, that would be in the category with the action of poisons in general, you reach the point of dilution where there is no injury, and then by increasing the dose there may be a chronic injury, or acute injury.

Q. 294. The extent of the injury, of course, depends upon the amount in the atmosphere?

A. And other conditions surrounding the forest.

Q. 295. Well, it is or not a fact that fruit trees and sometimes vegetables are sprayed with poisonous substances that are poisonous to the vegetable life, in order to kill insects?

A. Yes.

Q. 296. In such cases, I suppose caution must be exercised
1327 to dilute it to a point where it will not injure the vegetable.

A. Yes sir, it frequently occurs that spray mixtures are injurious to the foliage of the plant, but the average effect to the plant is beneficial.

Q. 297. Do you know with what substances they are accustomed to spray fruit trees?

A. They are sprayed with several different mixtures, especially lime and sulphur mixtures for certain fung-us diseases and certain insects, among which one is known popularly as Bordeaux mixture for the control of fung-us diseases.

Q. 298. Are, or not, all of these mixtures poisonous to vegetable life unless they are very much diluted?

A. Well it will depend on how they are introduced, in the case of Bordeaux mixture, for instance, copper is one of the most deadly poisons to the plant life. It is put on the leaf in the Bordeaux form in a precipitated mixture, because wherever some quantity of it can get through the leaf, the plant will die, but if it is introduced in connection with other substances, it is beneficial. If introduced in its pure state, it would simply poison it. For instance, in my experiments, I have known one part of copper to twenty million parts of water introduced through the root, to kill an apple plant in twenty-four hours. On the other hand the same amount with Bordeaux Mixture without great injury to the foliage would do considerable benefit in controlling certain diseases of the plant.

Q. 299. Professor, I wish you would describe the different parts of a tree, I mean those parts of a tree which perform functions in producing its growth.

A. Well, there are certain conditions that a tree must be placed in to live. I should say that the chief factors controlling the life of the tree in normal condition are a plentiful water supply and access to light, because it takes up the water through the roots from the soil and the water passes up through the trunks of the
1328 trees and on to the branches and escapes from the breathing pores in the leaf; and the leaves must be exposed to the air and sunshine in order to manufacture the food that the plant depends upon for growth and for the exercise of its vital functions.

Q. 300. In the first place, what are the particular functions that the roots of the tree perform?

A. It is mechanical functions of anchoring the tree to the soil, of absorption of water and mineral ingredients from the soil.

Q. 301. What are those mineral ingredients that are taken up by the root?

A. The essential ingredients are nitrogen, sulphur phosphate, potash, lime, magnesia and iron.

Q. 302. Now, do all those elements you have mentioned enter into the growth of the tree and become a part of the tree?

A. They are necessary for the life of the tree. They may not, and do not become a part of its skeleton in its living state, but they are necessary for the life and growth of the tree.

Q. 303. How is the moisture and other elements that you have mentioned carried up through the roots?

A. It enters the root by osmosis, or diffusion, and is carried up then to the larger vessels of the tree and distributed to the leaves, escaping from the leaves above. The ascent of sap in trees, that is, the movement of this water and other ingredients from the roots on up to the leaves has never been satisfactorily explained so far as I know.

Q. 304. I suppose it is the result of something like capillary attraction.

A. Well, capillary attraction does not account for it. It helps but very little.

Q. 305. At any rate, it enters at the bottom, at the roots and goes on up to the leaves.

1329 A. Yes, the leaves absorb very little moisture, not enough to enter into the life of the tree.

Q. 306. What function does the sap of the tree perform?

A. That sap of the tree, serves as a medium for bearing the ingredients from the roots on up into the tree, to the place where they are needed and also supplies the minerals of course, that are included among those ingredients, and it enters largely, chemically into the composition of the protoplasm of the tree, the living substance and also serves,—well this covers the case.

Q. 307. Now, do the ingredients which you have mentioned and the moisture pass up the tree through the sap, or through the older part of the tree.

A. You mean the sap wood?

Q. 308. Yes.

A. Yes, it travels through the sap wood, principally.

Q. 309. Does that portion of the tree which lies inside of the sap wood perform any function in the subsequent growth?

A. No, sir.

Q. 310. It is just a stem that holds the tree there?

A. Yes, sir.

Q. 311. And all the subsequent growth forms around that.

A. Yes, sir, as a matter of fact, the tree may be hollow and perform all of its functions for many years, the heart wood being dead and useless to the tree.

Q. 312. So the heart of the tree, instead of being its life, or rather the organ that keeps it alive, really has no effect on its growth?

A. That is right.

Mr. DRAKE: We except to this class of evidence as being rather foreign to the issue.

Exception overruled and appeal taken.

Q. 313. State, Mr. Bain, what function, if any, the bark

1330 of a tree performs?

A. Well, the bark of a tree, contains the tissue that is principally concerned with the transmission of the ingredients from the branches to the roots, for instance, in the potato, the starch is manufactured in the leaves and has to travel downward in the form of

up to the tubers under ground and the water is elevated up through the wood while the movement downward is through the bark, as of course there is a counter movement.

Q. 314. And then, part of the ingredients are moving down through the bark of the tree?

A. Yes, sir.

Q. 315. What is that?

A. Well, it is carbohydrates, manufactured by the leaves that move down and supply material in the formation of growing roots under ground.

Q. 316. Now, please explain fully just what the functions the leaves of the tree perform.

A. Their most important function is manufacturing of food substances, that is, the working over of the mineral elements, that is, the chemical elements of the air, such as carbon dioxide gas and water, working them over into the food for the tree. This is done by the green coloring matter in the leaves, the chlorophyll, we call it.

Q. 317. Do they take in any ingredients, or is that all brought up from the roots?

A. It is brought up from the roots.

Q. 318. Then, how is the growth formed around the tree?

A. Around the tree there are cells just at the line of junction between the bark and the wood, known to the botanist as the Cambium, and it is in this narrow zone, or cylinder, that the growth occurs, the wood being there united with the tree and each year forms a new layer, making the bark on the outside and the wood on the inside.

Q. 319. From which source is the material which enters
1331 into the growth principally drawn, down through the leaves, or up through the roots?

A. From the leaves.

Q. 320. About what per cent of it is drawn through the leaves.

A. Well, it amounts to the greater part of the dry weight of the wood, for instance, if you burn a log, it takes several men to carry it, but the ashes left behind a child could carry off, the ashes left are just the mineral that came from the soil, and even that contains a little that came from the air.

Q. 321. And is all the remainder that goes off in smoke and vapor obtained from the atmosphere.

A. Yes, sir.

Q. 322. And through the leaves?

A. Yes, sir, that is the principal part that enters of course into the manufacture of starch. Water enters into it from the roots, that is a part of the compound. The dry matter is composed of water and air made into food.

Q. 323. During what seasons does the tree grow principally?

A. It grows during the Spring and Summer.

Q. 324. Is there any difference in the appearance of the Spring and Summer growth?

A. There is, that is, the Spring and Autumn growth.

Q. 605. Please explain the difference.

A. In the Spring the tree lays down larger and thinner walled cells and in the Autumn they become generally smaller, with much thicker walls.

Q. 606. In which of these seasons occurs the most growth, the Spring or Winter?

A. Well from early April, to growth in diameter would be greater during the first half of the season, than the last.

Q. 607. Is there any special difference in the char-
1882 & 1888 acter of wood that is made during the spring from that made during the Fall?

A. Yes, sir.

Q. 608. What is the difference?

A. As I explained article ago, the cells composing the wood have thinner walls in the spring and thicker walls in the autumn.

Q. 609. State whether or not there is any growth in the tree fall and winter season at all.

A. There is none, after the leaves begin to fall and even during the winter.

Q. 610. If all the leaves on the tree should be blighted in the summer season, would there be any further growth after such happened to the tree?

A. There would be some growth, until the tree had exhausted its nourishment stored up. It has a little supply of starch, for instance, as which it would grow until that was used up, and then any until it would put on more leaves.

Q. 611. State whether or not the tree itself shows the amount of growth of each successive year.

A. It does.

Q. 612. Now, in what way does it show that?

A. It shows that in the form of annual rings, that each be line of union between the spring.... I mean between the autumn of the previous year and the spring of the present year.

Q. 613. Can one tell exactly the number of years that a tree has been growing?

A. Generally speaking, that is, save in the notice of the exceptions, in tropical regions where the conditions are practically not here sometimes no rings here.

Q. 614. Is or not that lead by the difference between the spring growth and the autumn growth?

A. Yes, sir.

1888 Q. 615. That is, the spring growth starting on to the previous autumn growth?

A. Yes sir.

Q. 616. Now, how is it, Professor, that anything comes action the tree and the progress of the growth of the tree?

A. It is through the leaves, by combining with the carbonic [illegible] of manufacturing food, after killing them, or impairing their functions.

Q. 617. May, or not, poisons of that kind stunt the growth of a tree very much and yet not kill it?

A. Yes sir.

Q. 337. Suppose, that a tree has been stunted in its growth for three or four or five years, or any number of successive years, and that cause is suddenly removed, how long would it take to recover its normal growth?

A. I have no means of knowing exactly, for nobody has ever investigated the matter. I have never been able to find out, but the opinions are that it might require some time for the tree to recover fully.

Q. 338. Have you given the matter sufficient thought to advance scientifically your views upon the subject?

A. Well, it is known that sulphur fumes retard the growth of a tree, both in the diameter of its trunk and in the length of its branches. That is, it retards both the growth in thickness and the growth in length. It stunts the growth of the branches and it is at least probable that that stunted growth of the branches would retard the beneficial effects of the removal of the smoke, for that reason it has not so many branches on it and when the leaves begin to put out again, it will put out new growth and gradually recover from the injury.

Q. 339. Then, it may take it several years to recover its natural condition.

1335 A. It may, of course, that is my own explanation of the matter. I know, however, the facts to be as I have stated in reaching the conclusion.

Q. 340. Is or not a tree in that respect somewhat similar to a human being when he is recovering from the effects of a disease?

A. Yes sir.

Q. 341. Now, you have stated, Professor Bain, that you took some blocks from trees during your visit there last fall, I believe you took some blocks of wood from those trees.

A. I did not take many blocks, last fall, when I investigated the Vestal property in North Georgia. We cut a few trees, and everywhere I could find a freshly cut stump, I made observations and watched out for this over the entire district every time I traveled it.

Q. 342. Did you take and have you a few samples of that kind?

A. Yes sir, I have a few.

Q. 343. How many stumps, or blocks, did you examine at that time, last fall?

A. I estimate that I examined and took sections from around two hundred trees.

Q. 344. I wish you would state what you observed from those examinations with reference to the growth of those trees.

A. Well, I found that with the facts that were given me as to the smoke history of the Ducktown region, that the method of determining the injury by examining for growth checks in the rings, of wood, that I could tell with a very great degree of certainty whether smoke had killed timber in a definite region and if so, when the smoke first struck that region.

Q. 345. I wish you would first state what those sections and stumps you examined showed with reference to the time when the

growth of timber in that section was arrested and when it,
1336 the growth, was resumed.

A. Over most of this region, in fact, all around the Ducktown basin, and even up on the foothills around the edge of the basin, I mean up on the mountain ranges, I found that by far the greater injury from smoke occurred subsequently to 1905, that is, the growth check began, for the most part in 1906 or 1907 and in some other cases they began in 1901 and 1902, both of them.

Q. 346. In 1901?

A. A very few of them began in 1894.

Q. 347. Those that began in 1894, how long did they last?

A. Some specimens show growth checks from 1894 to 1898, with improved growth for two or three years until 1901 and then much greater checks.

Q. 348. Now, was that the condition that you observed in North Georgia?

A. Yes, That was practically the same in North Georgia. I found only a very few trees near the Tennessee line that showed any check of their growth before 1901, as far back as 1894.

Q. 349. Did you find any trees, if so, how many, that showed a checked growth before 1894?

A. I do not remember to have found a single one on any of my trips to Georgia that began in 1891, with one or two possible exceptions. No, not a single one. I do not find any record of any. I was under the impression that I had found one or two possibly near the Tennessee line, but I do not find it, out of the larger number examined.

Q. 350. Well, will not any disease check the growth of the tree?

A. Yes sir, any unfavorable condition will check the growth of the tree. I have found that growth checks result from fires burning off the forest floor, and the consequent suffering of the tree for water, may cause growth checks, and of course, any kind of
1337 chronic disease to the tree will check its growth by interfering with its normal functions and then I have seen evidences that building a road through a forest packing the ground around the roots of a tree will affect its growth. I have found it even possible in some instances to tell when a road is built through a forest and tell that by the growth check.

Q. 351. Then, out of the two hundred or more samples you examined, there were only one or two indications that growth had been checked before 1894, would that be any evidence that that check resulted from sulphur fumes?

A. I think not.

Q. 352. I believe you said the indications were that the growth was probably check- after 1905.

A. Yes, it began with the growing season of 1906.

Q. 353. Did that check continue on up to the present date?

A. In the majority of instances the check showed in the seasons of 1912 and 1913 that the conditions were improved, in those examined in the North Georgia section. I have gone over that material carefully for information in this case.

Q. 354. What percent of those trees showed improvement in those years?

A. I tabulated the results here, of the fifty-four cores that Mr. Haenseler got under my instruction last week.

Q. 355. I am asking now as to those you sampled last fall, what per cent of those trees showed improvement of growth in 1912 and 1913?

A. I have not tabulated that. I have quite a number of instances in which they did show improved growth.

Q. 356. State whether or not you have some of those,——

The WITNESS: If that question is important, I can run that up tonight.

Q. 357. I will ask you to state whether or not this method of determining the amount of growth of trees, and when the
1338 growth of trees was check-, is one that is well known to scientists.

A. Yes sir.

Q. 358. Can you name any scientists by which it is well recognized?

A. It is recognized by a number of the German students of smoke injury, and one of the standard publications is Haselhoffand Lindau, on injury to vegetation by smoke, Handbook for the Recognition and Detection of Smoke Injuries, published in Leipzig in 1903.

Q. 359. State whether or not you are familiar with the German language.

A. I read it.

Q. 360. Do you read it continually?

A. I do.

Q. 361. State whether or not you have read a number of German works in studying this.

A. I have read a number, and read through the books I have referred to.

Q. 362. Have you a photograph taken from a portion of that book, showing how to determine this particular method of determining that growth of trees?

A. I have.

Q. 363. If you have, please file same as Exhibit No. 65.

A. I do so.

Q. 364. Now, Professor, have you present a number of sections that you either took from the tree or had taken while making this investigation?

A. I have.

Q. 365. Professor, please describe that picture from the book you have mentioned (Exhibit No. 65).

A. This is a copy of Page 106 of the work referred to and is reliable. The illustration shows in figure 8 at A a section of a
1339 Spruce tree, at Grevenbruck, the result of smoke injury beginning from 1885. The picture at A is 33 years old. I mean is of a tree 33 years old, and Figure B is a healthy tree of the same species 26 years old. The annual rings show the date when the

smoke struck the tree, Figure A, and also compares the healthy growth of a tree in Figure B, which is 26 years old.

Q. 366. I show you section No. 141, please state what kind of tree that was taken from, where the tree stood when you obtained it and have it marked as Exhibit No. 66.

A. I mark same as requested. 141 is section from a White Pine tree which I secured on the 20th day of last October on the road from Copperhill to Tumbling Creek, which I referred to this morning and its exact location I believe I will have to depend upon Mr. Reese to give, but I think it it about a mile from Tumbling Creek.

Q. 367. How far was that from the furnaces of the Ducktown Company or the Tennessee Company?

A. I cannot tell exactly, I will have to depend upon Mr. Reese to give that.

Q. 368. Professor, state what that block shows with reference to the growth of the tree.

A. That shows a uniform, normal and healthy growth up to 1906, with a slight check in the growth and thickness of the rings during the season of 1906, and then a decidedly distinct check from 1907 to 1911 inclusive, then, in 1912 and 1913, it shows improvement in growth. I have also a color photograph illustrating the locality from which this tree was taken.

Q. 369. I hand you photograph No. 120, is that the photograph to which you refer?

A. That is.

Q. 370. If so, file it as Exhibit No. 67.

A. I do so.

Q. 371. How near normal was the growth of that tree in 1912 and 1913?

1340

A. (Examining sections of tree, Exhibit No. 66.) Well, probably on an average, not quite half.

Q. 372. Do you know whether or not the fact that is was not a full growth was because it had not fully recovered from the previous effects?

A. It had, so far as its leaves were concerned, every appearance of being in a healthy condition.

Q. 373. And was there any outward sign that there had been any injury to that tree during the year 1913?

A. None that I could see.

Q. 374. Was there any evidence that the foliage of the tree had been injured in the least?

A. No sir.

Q. 375. Of course you did not see it during the year 1912.

A. No.

Q. 376. And you could not testify as to that?

A. No.

Q. 377. How often does the Pine Tree shed its foliage?

A. A leaf puts out in the Spring and stays on two full seasons, generally, sometimes it will stay on a young tree longer. The tree is too young, and of course the leaf growth stays on that long.

Q. 378. Was there any evidence of the foliage on that tree being injured at any time since it had put out.

A. There was none at that time.

Q. 379. State whether or not the rings on a tree become less the older it becomes, and the larger the tree.

A. Well, that is true, with this exception, a very young tree which starts out with comparatively small rings and then increases in size for a certain period, usually a short time, then it reaches a maximum and then as it gets older, the average growth slightly drops down.

1341 Q. 380. Take a Pine tree or Oak tree, when will it reach its maximum ring growth.

A. That will be so variable under different conditions that it will be impossible, I think, to make a statement.

Q. 381. Could you state, by looking at the section you have filed as Exhibit, whether or not that reached its maximum growth before 1906?

A. I could not.

Q. 382. I show you a block which is numbered 225, from what kind of a tree was that taken, and what point, and state what the rings in that tree show.

A. This was taken from a Spanish Oak tree, near Hothouse Creek, Georgia, and about half a mile east of Hothouse creek that was gotten on the 24th day of January of this year.

Q. 385. What does this show with reference to the growth of the tree?

A. That shows a very remarkable and distinct growth check, beginning with 1906 and continuing to and including 1911, and the growth of 1912 and 1913 are almost normal, that shows better on the face of the cut, here, than it will on the cross section.

Q. 384. Can you state how far that was from the furnace?

A. I do not believe I could, but Mr. Reese can do that.

Q. 385. I show you a block numbered 65, state from what kind of a tree this was taken, where the tree stood and what it shows with reference to its growth and file same as Exhibit No. 69.

A. I collected that specimen on the 4th of last October, from a freshly cut Beech stump, on the bank of the Toccoa River, I think it was approximately two miles from Copperhill. You had better get Mr. Reese to state that.

1342 Q. 386. What does this show with reference to growth?

A. That shows no growth check until 1902, and a still further reduction in growth from 1906 to 1911, inclusive and the growth of 1912 and 1913 is almost, if not quite, normal.

Q. 387. I show you block number 112, what kind of tree was that taken from and what was it intended to illustrate, and where was it obtained, and file it as Exhibit 70.

A. This is on the ridge toward No. 20 Mine, you will have to depend on Mr. Reese to get the distance. That is an Oak Tree, showing a slight check in 1906, a remarkable check beginning with 1907, showing a decided improvement in 1912 and 1913.

Q. 388. I show you a block numbered 130, state where that was

taken from and what you know, if it illustrates anything and file same as Exhibit No. 71.

A. 130 was collected on the 13th of October, right at the point where Tumbling Creek crosses the Tennessee Georgia line, and was gotten to show the effect of fire on the growth of trees in the year following, and also to show the possibility of determining the date, approximately, of the occurrence of the fire, and also the direction from which the wind was blowing, the fire scald being on the portion to the windward side of the tree. That shows the fire to have occurred before the growth of 1910 began and after the ring of 1909 was completed, so it was done approximately between October 1909 and April 1910. The annual ring of the year 1910 shows a very perceptible reduction, as a result of the fire. There were other trees standing nearby which showed fire scald. One I remember, a pine, showed, a reduction of growth during the same year, though no fire scald. I wanted a sample to show the effects of fire on tree growth as one of the deleterious influences, and possibilities of determining the dates of fires.

Q. 389. What does the block show as to the extent of growth during the year- 1912 and 1913?

1343 A. That growth is on an average, well, for 1911, 1912 and 1913, about the same.

Q. 390. Do you think it is normal?

A. Well, they are hardly normal, no, it would be pretty hard to draw a conclusion along that line, from that young a tree, because it has not grown long enough to establish a uniform normal growth.

Q. 391. State whether or not they are something near as large as those up to the time the fire struck it?

A. Well, on an average, better perhaps, than the two years preceding the fire, decidedly better than the three years preceding the fire.

Q. 392. What year was that, the third year preceding the fire?

A. That is the growth of,—they are decidedly better than the growth of 1907.

Q. 393. I show you block number 121, please state from what kind of a tree that was taken, the locality in which the tree was found and what it shows with reference to growth and file the same as Exhibit No. 72.

A. This is a second tree from that group where my number 120 was taken, and where that color photograph was taken, showing remarkable growth check beginning with 1906, with some improvement in 1912, and 1913 over previous two years.

That also illustrates the reliability of this method of determining the date when smoke struck the region, and whether the smoke had struck it afterwards in the history of smoke production. Where this photograph, my No. 120, was taken, a number of dead pines from the roadside had the appearance of having been killed by fire, but I found upon examination that they had not been killed by fire. The first tree from which I took a chip established growth checks, beginning about 1906 and 1907, so if the smoke killed these trees, they were killed as the effect of the application not earlier than 1906.

1344 Mr. DRAKE: Note an exception for the reason that the answer is argumentative and no facts stated on which to base such a conclusion. Exception overruled and appeal taken.

Q. 394. State whether or not you have also made some bores into a number of trees in North Georgia with the same object in view.

A. I made a number.

Q. 395. When did you do that?

A. I made some on the 23rd day of January of this year, some on the 24th of January of this year, I have an impression that there was another trip.

Q. 396. Do you remember how many cores you took?

A. I cannot state exactly, a considerable number.

Q. 397. Just give us a guess of your best judgment.

A. I can give it approximately. 28, I believe it is on that trip and I believe about 23.

Q. 398. State what those cores show, with reference to the growth of trees.

A. I believe I answered that question in a former one.

Q. 399. Did your answer include both the cores and the sections cut from the trees?

A. Yes sir.

Q. 400. Did the cores and the sections correspond in that respect?

A. Generally, well in fact always when the cores were taken at or near the point where the section was, a core might possibly vary a little but. But, even when taken from different parts of a tree, I was always careful to select a portion of a tree that showed normal growth contour on the surface and to get the natural condition. The advantage of the borer is that you can get cores from a large

1345 number of trees without injury to the trees and you have a better view of the average condition over the region.

Q. 401. Is that a device manufactured for that express purpose of taking cores from trees for the purpose of determining the internal condition of the tree?

A. It is, for sampling timber and for similar purposes.

Q. 402. State whether or not you have recently sent into that section of the country your assistant Mr. Haenseler, for the purpose of taking other cores?

A. I did.

Q. 403. When was that done?

A. I believe he left Knoxville last Tuesday, and was in the field Wednesday of last week.

Q. 404. Did he on his return, deliver to you cores which he had taken from trees.

A. He did.

Q. 405. Of ocurse you do not know where they were located except what he has told you.

A. No sir.

Q. 406. Who numbered those cores, you or he.

A. Mr. Haenseler.

Q. 407. Did he then turn them over to you?

A. He did.

Q. 408. Have you made an examination of all the cores Mr. Haenseler delivered to you?

A. I have.

Q. 409. I wish you would state what those cores show with reference to the growth of those particular trees.

A. I have examined those cores with particular reference to the existence of growth check in recent years, and especially to determine whether in the recent years there has been shown any im-
1346 provement in growth, after having been checked in previous years.

Mr. DRAKE: We except to the answer because the cores have not been sufficiently identified as having come from this smoke affected district. Exception overruled and appeal taken.

Q. 410. What did you ascertain?

A. I went carefully over these, there were fifty-four in number, and there were twelve out of the 54 that showed no growth checks whatever. Thirteen of the cores did not show the annual rings definitely enough to determine their growth, without making a microscopic section, but those thirteen were for the main part poplars and Maples and other trees that are quite resistant to smoke injury. Out of the remaining twenty-nine, there were five that showed no improvement in recent years. There were eighteen of them that showed distinct improvements during the years 1912 and 1913. There was one which showed decided improvement in 1913 and also had grown enough during the current season, 1914, to be able to state definitely that the growth of this current year was an improvement. There were three that showed improvement for the last three years, that is, 1911, 1912 and 1913, and there were two that showed improvement during the years 1910, 1911, 1912 and 1913.

Q. 411. Professor, this morning Mr. Haenseler filed two of those cores as Exhibits 1 and 2 to his deposition, did you recognize those as being two of the cores of which you made an examination?

A. I do.

Q. 412. What do these cores show, Professor?

A. His Exhibit No. 2 shows a check from 1901; 1911, 1912 and 1913 shows steadily improved growth. His Exhibit No. 1 shows a very distinct check from 1907 to 1911, 1912 and 1913, are about normal. Also I made a section of this sample and photographed it.

1347 Q. 413. State how many of these section- were given *were given* you by Mr. Haenseler, show growth checks as far back as 1901.

A. Only one, I believe. There is one check long previous to 1891. There is one possible check in 1892, a very doubtful one, not sufficiently marked to be certain about it. And that is all as far back as 1891.

The hour growing late, an adjournment was taken in the further hearing of this deposition until 9:30 o'clock A. M. on the morning of Tuesday, June 23rd, 1914, at the same place.

1348 (Pursuant to adjournment the further taking of depositions in this cause was resumed at 2:00 o'clock P. M. on this the 23rd day of June, 1914, in the presence of the same parties and at the same place as heretofore mentioned.)

The said S. M. BAIN, being recalled for further examination, deposed as follows:

Direct examination.

By J. A. FOWLER, Esq.:

(The last questions and answers of Prof. Bain on direct examination upon yesterday were then read to the witness.)

Q. 1. You will notice Prof. that in a previous question I referred to the year 1901 while you and your answer apparently refer to the year 1891. If you have made a more careful study of the specimens furnished you by Mr. Haenseler since the adjournment of your deposition on yesterday, I wish you would state what the result of that study is?

A. You mean the tabulated results, the whole thing.

Q. 2. Yes, state what you have learned about those specimens?

A. There is a slight correction in the figure given as to the percentage or rather the number of improvements shown, and I can give them if you wish, the tabulated results.

Q. 3. State the tabulated results?

A. Out of the 54 cores handed to me by Mr. Haenseler there were fifteen that showed no checks. There were twelve principally of yellow poplar and maple that are very resistant to sulphur fumes in which the rings were two indefinite to read without a miscroscopic section. There were seven out of the fifty four
1349 that had been checked and showed no improvement within the last few years. Of this number that showed no check in the growth, that is none that could be directly considered as indicating smoke injury, but yet showing improved growth during 1912 and 1913, there were three. Of these three there was one that showed improvement in 1913 and 1914, that is during the current season the growth had proceeded far enough to show that it would be an improvement over the previous years. There were thirteen showing improvement during 1912 and 1913. There were five that showed improvement for the three years, 1911, 1912 and 1913. There were two that showed improvement during the year 1910, 1911, 1912 and 1913. I have also tabulated the dates when these growth checks began. There was one that was checked long prior to 1891. There was one which very doubtfully showed a check beginning 1892, there was one that showed somewhat of a check in 1893. There were two whose checks doubtfully began in 1894, one which certainly began in 1894. Another that doubtfully began in 1895, one began in 1899. Two began in 1901; five began in 1902; one began in 1904; two began in 1906; two began at an uncertain date, but more marked in 1906; one began in 1907; one in 1908; two in 1909; and three at an uncertain date.

Q. 4. Professor, state whether or not you have photographed a part of one of the cores given you by Mr. Haenseler and have enlarged that photograph?

A. I have.

Q. 5. When did you do that work?

A. I made the section on last Saturday and made the photograph on Sunday.

Q. 6. Has the core which you photographed been exhibited?

A. It has.

1350 Q. 7. What exhibit is it?

A. It is exhibited to Mr. Haenseler's deposition as No. 1.

Q. 9. What part of the core was photographed?

A. From the study of the core, it is evident that the end next to the bark had been cut off in order to fix it in the microtome for sectioning it. There is not enough of the picture to show more than the growth from 1905 to 1914 as for as it had grown. I do not believe that the microtone shows all of that section, but far enough to indicate,——

Q. 9. Have you the enlarged photograph present?

A. I have.

Q. 10. Will you please file the same as Exhibit No. 73 to your deposition?

A. I do.

Q. 11. Please take this photograph and explain what it shows?

A. The enlargement was made from a thin microscopic section covering the period stated, and is magnified to about 160 diameters. The picture had to be made in two parts. The ends showing the beveled cut with the arrows indicated near the date 1912, shows how the picture is to be put together, to show continuously the section from the beginning on the right to the growth of the year 1905 on the left. This picture shows on the extreme left, at the lower left hand corner, a portion of the cells of the autumn wood of the season of 1905. Then proceeding to the right over the place marked 1906 are represented in the section the cells that were formed on this tree during that season to this point. *As represented in the section the cells that were formed on that tree at that season during this point.* The cells of the spring wood are definitely shown in the section, the walls being marked by their thin-

1351 ness, the open spaces, known as the lumina of the cells are considerably larger than in the autumn wood. Notice from the growth of the spring wood at the end of 1905, which is marked at the bottom of the picture, the cells gradually diminish in size and the walls increase in thickness up to the end of the season's growth, as indicated by the marks shown 1906 and 1907 at the top of the picture. In this autumn wood during this year, are shown the sections of two resin ducts, into which the resin is discharged from the secreting cells around. Then we next come proceeding to the right, to the section showing the growth during the year 1907. Here is shown a very decided reduction in growth, considerably less than half the progress being made that was made in the previous year, 1906. During 1907 is shown a portion of a resin

duct at the bottom of the picture. During 1908 the thickness of the annual ring is still more reduced than in 1907, and another resin duct is shown in section. During 1909 the growth is still very much reduced, though not quite so much so as 1908. A portion of a resin duct shown at the upper portion of this year. The growth has been more but not nearly the normal growth has been established as shown by the growth of 1906. One resin duct is shown in the section during the growth of 1910. During 1911 there is still some further increase in the rate of growth. There are here shown sections of one resin duct complete, and a portion of another at the bottom of the picture. During 1912, the tree has grown fully as much as it did during the season of 1906, and its grown has evidently become normal as indicated by this section. At the lower portion of the growth of 1912, is shown a portion of another resin duct. During 1913 the growth is still about normal, and the resin duct is shown toward the bottom of the right hand corner of the year. The section shows very distinctly the point where the bark is reached, which is indicated by the mark at the top
1352 of the picture. At the lower portion of the picture is shown an inscription marked cambium. This is the region where the tree grows, new cells are constantly formed during the growing season, making bark on the outside and wood on the inside. It is shown in this picture that the growth of this tree during 1914 had already exceeded in diameter the growth for the year 1909, though as shown by the picture the autumn wood has not yet begun to be formed.

Q. 12. Does that or not indicate that the growth for the present season is at present normal?

A. As compared with the spring wood of 1913, the spring wood of 1914 is, in this specimen, already more. It is apparently fully as much as was formed during the season of 1912.

Q. 13. You spoke of resin duct-, what are their functions?

A. The function is to secrete the reson, the resin that is manufactured in the cells of the trees, which is poured through the walls of the cells around these open cavities and that is where the resin in this kind of tree accumulates.

Q. 14. What in this photograph represents the cells of the trees?

A. The cell is really constructed like a box, that is, it has walls with an open space on the inside. The walls of these cells are shown, of course, here in section just as though you would saw off one side of a box, and leave it open and look at the open end of the box. If the box were made of thick lumber, it would show distinctly on looking at the side of the box that it was, if it was of very thin lumber, of course the box would show that, the lumber being shown by the sawed section. The section of the wood cell is entirely an-
alogous to the construction of the box, except the wood in
1353 these boxes is sawed open so as to have an open face in the walls representing the open end. The walls of the cells are the solid material of the wood surrounding the open space.

Q. 15. I show you photograph No. 3, will you please state where that was taken, what it represents and file as Exhibit No. 74?

A. It was taken in Lot No. 176 on Bear Branch in Georgia. Mr. Reese can verify the locality; it was taken on the 16th of September, 1913. It shows the condition of timber at that point, the healthy appearance of the foliage, with some dead hemlock intermixed. The dead hemlock showed five scalds about the base and were probably destroyed by fire.

Q. 16. I show you your photograph No. 7, please state where that was taken, what it represents and file it as Exhibit No. 75.

A. This was made on the 16th of September, 1913, and was located at the Ford on Jack River in Georgia, Lot 148, the locality being given me by Mr. Reese.

Q. 17. Is there any dead trees represented in that photograph?

A. There are fire killed hemlock in the right foreground, but the hemlocks intermixed with the other timber are shown by their foliage to be in a healthy condition.

Q. 18. How long did those hemlocks appear to have been killed.

A. I made no observation as to the date.

Q. 19. I show you photograph No. 24, please state where that was taken, what it represents and file it as Exhibit No. 76.

A. This is a photograph on the 17th of September 1913, showing the home and surroundings of one McJunkins, a grove
1354 of healthy hemlock about the house. There is one dead one in the view which Mr. Reese says has been girdled, I forgot to examine it myself.

Mr. DRAKE: We except to the answer so far as it includes what Mr. Reese testified.

Q. 20. I show you photograph No. 31, please state where that was taken, what it represents and file it as Exhibit No. 77.

A. I am not competent to state.

Q. 21. Were you not along when the photographs were taken?

A. I made the photograph, but I do not know the exact locality.

Q. 22. I wish you would state the locality?

A. Of course, it is with the understanding that the locations are given by Mr. Reese.

Q. 23. As I understand you were present and made the photograph?

A. I made the exposure and developed the picture.

Q. 24. As to the locality you learned from inquiry?

A. Yes sir.

Mr. DRAKE: We will note a general exception to all the answers regarding the pictures insofar as the statements of the localities at which they were made, as Prof. Bain says these localities were given him by other-.

WITNESS: This statement applies only to the,—This photograph was made on the 19th of September, 1913, it shows a general condition of timber on a mountain side made some thirty or forty feet up a chestnut where I climbed to place the camera. It was made from Lot 104 overlooking Lot- 103, 101, 100, 79, 80, 81. The

space covered in this view was about a mile and a half long,
1356 the length being from left to right in the picture.

Q. 25. I show you photograph No. 67, please state when that was taken, what it represents and file it as Exhibit No. 76.

A. My picture No. 67 is a photograph taken of a white whitepine tree on the left of the road showing the appearance of the tree as a result of the leaf tip injury that was referred to in some of the answers on yesterday. This, as I verify myself, is on the road between Ellijay and Ellijay, Georgia, and about a half mile within the Murray County line, as indicated by the sign board on the side of the road.

Q. 26. I hand you photograph No. 68, please state where that was taken, what it represents and file it as Exhibit No. 77.

A. This is a view of the house, orchard and premises of Mattie Chilton, showing Fish Mountain in the background, made on the 3rd of October, 1913. This is the east half of the southeast quarter section, 35 Fractional Township, Range 5 east of Polk County, Tennessee.

Q. 27. I hand you photograph No. 69, please state where that was taken and what section of the country that represents and file it as Exhibit No. 80.

A. No. 69 shows an apple tree on the premises of John Williams within Georgia, three miles by road from Copperhill and I testify myself, the compass bearing from this point to the high stack of the Tennessee Copper Company which read North 82 degrees east.

Q. 28. I hand you photograph No. 70, state where that was taken from and what it represents and file same as Exhibit No. 81.

1356 A. This is another photograph made on the 25th of October, 1913, showing Williams' house from another point of view and a general landscape surrounding and the condition of vegetation.

Q. 29. I show you photograph 71, please state what that represents and file it as Exhibit No. 82.

A. This was made on the 25th of October, 1913, and shows a planted crop of corn, and apple trees in normal condition for that time of the year on the farm of Will Harper, about seven and one half miles from Ducktown, I noticed the point there myself, passed the eight mile post along the road about a half mile back.

Q. 30. I hand you photograph No. 72, please state what that represents and file same as Exhibit No. 83?

A. That is a photograph made of the orchard of John Quinn, taken on the 6th of October, 1913, showing peaches about ripe, the condition of the crops, with Mr. Rose standing within the foliage of the trees.

Q. 31. I show you photograph No. 73, please state what that represents and file same as Exhibit No. 84?

A. That is another photograph which I made on the 8th of October, 1913, of the Quinn orchard, house and premises showing the condition of fruits and peach trees at that season, with some

[illegible] about a year old in the foreground, the other one toward the left ground.

Q. 95. Have you one of the photographs of those which was taken about the same time and which took place at different points in that same locality in Georgia.

A. I have some taken in Georgia which I overlooked yesterday.

Q. 96. How many are there?

A. I have two.

Q. 97. Please mark what have numbers on and what point they were taken from?

A. They are made on the 20th of March, on the property of Harper, my numbers 219 and 27.

Q. 97. What do they show?

A. They show a backwood home fully the middle and in the front are a considerable number of dead trees evidently killed by fire and in my number 219 is shown a white dog and in general condition, several men at home. 27 shows the exhibit and cattle.

Mr. Taylor: We object to the question and answer as to the photographs not being the best evidence.

Exception overruled and agreed upon.

Q. 98. Will you please hand them the photographs in the envelope before he leaves the city and the time is [illegible] 97 and 27?

A. I will.

Q. 97. Now, we have any questions you wish to make of any thing you omitted to my remarks?

A. On the day, to which reference has been made I was under the impression that I had not omitted upon the State of Georgia. I am quite sure the North Carolina line, and in saying by that I had made into Georgia I overlooked his and you omitted I beg not to the State of Georgia but have photographs now ready and that covers what observations have made.

Q. Who my person else can call at Rose relying the [illegible] photographs of different localities which are here made, and different points showing the nature of trees and trees and yellow pines, trees and things of that kind?

A. That applies to all the exhibits, everything that has been exhibited.

Q. Yes, sir?

A. Mr. Rose was present at all of the points to and about North [illegible] in North Georgia, and on the trip to the Cumberland Plateau, the trip and on the trip to Chicago and return, in North Georgia the points representing conditions in Illinois and North Carolina. Testimony, was made by myself. Rose testified that I was testimonial.

Q. You say that you do not know personally as to the exact locality where each of those photographs were taken but I [illegible] you do not know who lives in that locality, to which the photo-

was taken, or whose houses you were taking; is that what you mean?

A. Yes, sir, I do not know of my own personal knowledge. I do not know all the lot numbers or sections and quarter sections I was on in Polk County, but did know from the location of the map that it was in that vicinity. At a number of different points on each of my trips to Ducktown I had a compass with me and took my bearings from the high stack of the Tennessee Copper Company and verified them, so as to check up the different localities, and I know of my own personal knowledge that I can locate them approximately on the map and they are correct.

Q. From whom, then, did you get your information that you have embraced in your notes?

A. As to the localities?

Q. Yes, and which you have testified to here?

A. From Mr. Reese.

1359 Q. And state whether or not you faithfully and correctly recorded in your notes, stated in your testimony the information obtained by you from Mr. Reese?

A. I did.

Q. That is all, unless you remember something left out, Professor?

A. I believe that is all.

Cross-examination.

Questions by J. A. DRAKE, Esq.:

Q. Did you have a color photograph of that plant, the Ducktown Copper Company plant?

A. Not at close quarters.

Q. Have you that kind of photograph in this record?

A. I have not.

Q. You could take a photograph of it, that would show just how that smoke boils up couldn't you?

A. Yes.

Q. What sort of looking smoke is that?

A. Sulphur dioxide. The sulphur dioxide is colorless.

Q. The kind we call sulphur dioxide, that boils out of that stack, what kind of looking stuff is that?

A. That is sulphur dioxide. It is colorless itself, but as it appears to the eye, it looks white.

Q. It is a kind of hazy, blue looking smoke?

A. No, white, as it comes out of the stack.

Q. Quite a volume of that issues from the stack of the Ducktown Copper Company, does it not?

A. It depends upon what you mean by "volume."

Q. Well, I mean by that, cannot you see it?

A. Yes.

Q. Do you remember the number of the picture that you filed there that has got Mr. Rennick's house in it?

1360 A. I will get it.

Q. Will you find it and look at it and say what that is across one end of it, pasted on there for?

A. That is the illustration shown in the picture.

Q. I will ask you if the picture was made looking towards the Copper plant?

A. Yes, sir, looking as I remember, about forty-five degrees to the right of the copper plant, about a half mile away.

Q. This strip on the left hand side of the picture, if that was removed, if you could not see the smoke boiling up?

A. No, sir. I can remove it, and can explain why the strip is there, if you wish.

Q. You need not do that, I thought it would show up on the record. You have filed a good many exhibits, wood and pieces of wood, and pictures or photographs of the growth of wood. I will ask you from your experience as a botanist, if you do not know that wood is not uniform in its growth anywhere?

A. Wood is, under normal, uniform conditions, relatively uniform in its growth.

Q. But is the condition uniform anywhere?

A. They are uniform over considerable stretches of time, not sufficiently variable to show striking differences in the rate of growth.

Q. Did you ever see a tree that would show a uniform growth all the way through?

A. There would be, if you measured microscopically, down to the thousandths of an inch, no uniformity, but there would be sufficient uniformity to see very clearly whether unusual influence had acted on the tree during that period.

Q. And cannot you see in any log, just look at it with your natural eye, and tell that the rings are not uniform?

A. There will be very slight differences in a tree under normal condition, yes, sir, as I stated on direct examination; for in-

1361 stance, a very dry year will show a slight reduction in the thickness of the ring, but these variations under natural conditions are very slight.

Q. You understand the question, Professor, do you not *not*; please just answer it directly, if you can?

A. (Question read.)

A. There would be slight differences in the thickness of the ring in any log. It would begin under normal conditions in the season with comparatively thick rings then the normal course of the tree is to reach after a certain number of years a maximum thickness of ring, and then as it gets older it dwindles down until its death.

Q. The color photograph—the long photograph that you introduced here, what number is it marked—Exhibit 73, where is it taken from?

A. The specimen was furnished me by Mr. Haenseler, from which the section was made.

Q. You do not know where it came from?

A. Not of my own personal knowledge.

Q. The growth, I believe you say shows back in 1906 to be normal?

A. Yes, sir.

Q. And then it gets worse up until about 1910, along there, and then it goes to getting better until, I believe you say, it is back to normal in 1914?

A. Yes, sir, 1912 and 1913 and so far in 1914, about normal.

Q. Now, if it should transpire that that smoke was worse up there in 1906 than it ever was in that section, you would not think that tree was exposed to it, would you, from the looks of that wood growth?

A. Judging from that single specimen, by itself, without any others taken in connection with it, I should not.

1362 Q. Do you know anything about the laws of the diffusion of gases, Professor?

A. I am not a physicist.

Q. Just looking at that smoke, I will ask you if it is not a fact that as it gets into the atmosphere, it acts very much like smoke coming out of a chimney, at times, and will carry along in a uniform volume or streak, it will go right straight out somewhere?

A. Yes, sir. This will happen under certain conditions. That is, I know enough about air currents and diffusion to know that up high in the atmosphere, smoke p-uring out of a chimney will move for a considerable distance without the eddying effect that is produced if the smoke issues from near the ground. That is, smoke issuing near the ground, will strike a hillside, and little eddies will be formed. If released high up in the air, it will go straight off a considerable distance against a mountain side, without being greatly diluted by mixing with the air.

Q. And aside from hills and the contour of the country, is it not a fact that atmospheric conditions have a great deal to do with the condition of smokes and gases?

A. Atmospheric conditions, so far as I know, should not have anything to do with what physicists know as diffusion of gases. Diffusion is a moleculear process which occurs in perfectly still atmosphere, and air currents would be mechanical movements, or streaming of the air, which would assist in the mechanical influences of the air.

Q. Would not the dissolution or scattering of the smoke vary under different atmospheric conditions?

A. They would.

Q. And would not they vary the appearance of that smoke?

A. Well, I do not know. Of course that is advancing into physics in which I do not claim to be an expert. I remember something of course, of what I studied. I know of no effect of the atmos-

1363 phere that would change the appearance of smoke to the eye.

Q. I believe you said you were raised down in the country about Eagleville, Tennessee, that is a small country town?

A. A little village. I was raised in the country, yes.

Q. Have you not seen, many times, when you were a boy, chim-

neys out in the country, old fashioned chimneys where they burned wood?

A. Yes, sir, I have.

Q. Haven't you seen smoking boiling our of those chi-neys and go away out for two or three hundred yards, going off in a straight line?

A. Yes.

Q. Looking like it would hold right together?

A. Yes.

Q. In a continual thread.

A. Yes, sir, I have.

Q. And haven't you, on other occasions, seen it when you could hardly distinguish it?

A. I have.

Q. What would you attribute that to?

A. As far as my observation has gone, I would attribute that to the change of position that the smoke would go through, and it would be against the sky so you could not see it, so far as I know, as matter of common sense observation.

Q. That is what I am speaking from, just common sense standpoint. Doesn't the condition of the atmosphere have all to do with the way smoke rises out or hangs to the ground?

A. Yes, sir, that is true. That is a different question to what I understood the others.

1364 Q. And at that time, would not smoke rise up straighter and higher than it would on other occasions, the same kind of smoke or gas?

A. Yes.

Q. And what would be the cause of that?

A. So far as I know, I would attribute that to a difference in the pressure of atmosphere, and, perhaps, that is, the atmosphere becomes heavier, and the smoke will be more apt to rise higher.

Q. Haven't you seen smoke on some other occasions collect in great balls, and apparently go rolling through the elements; have you not see- those conditions?

A. Well, no.

Q. Especially from a locomotive, have you not seen that at times when they would make most beautiful pictures in the air?

A. Yes, sir.

Q. And would not these balls hold together, and go off hundreds of yards before they would scatter?

A. I have seen them go a considerable distance, but if the balls should strike a hillside, they would break to pieces and scatter.

Q. Did I ask you anything about any hillsides, or anything of that kind?

A. No, but you asked if I had seen them scatter, and I have, under those conditions.

Q. Of course, anything Professor, that smoke was driven against, in the way of mountain or hill, would check its progress in that direction?

A. Yes, sir.

Q. And if a mountain should intervene between a fellow's crop, and the smoke, the mountain would have the tendency to break or protect it from the smoke?

1365 A. I should think so.

Q. How long, Professor, have you been in the employ of the Ducktown Copper Company?

A. I have not been particularly in their employ over any great period of time. I have spent intervals of time since the 12th of September, last, in its employ, in this investigation. I have not been continuously in its employ.

Q. How much time have you spent, if you know, in the collection of these specimens and photographs?

A. Do you mean in this immediate case, or altogether in the region?

A. In all of them.

—. I could not tell exactly, it has been, you mean in all, the entire investigation, or just in making the photographs?

Q. In this particular case?

A. It has been, perhaps, let me see. Last Fall, on the case fourteen days, in the neighborhood of Ducktown in the study of this particular case, altogether and this spring, would, perhaps, make something over twenty days in the field investigation.

Q. On all your tours down into the State of Georgia, I believe you say, Mr. Reese, was your conductor?

A. Yes.

Q. And he is an employee of that Company?

A. Yes, sir.

Q. And familiar with that country?

A. Yes, sir.

Q. And all the samples and specimens that you have here, you got them at points to which he conducted you?

A. Not in that sense, exactly.

Q. Well, in what sense?

A. I asked, when I first met Mr. Reese, to be taken to the points most exposed to the smoke of the Ducktown Copper Company, and suggested a number of points of investigation, and in all my

1366 investigation I searched out the points which I thought to be the most liable to smoke damage.

Q. Did you find much of it down there?

A. As I stated on direct examination, last Fall I found no evidence of injury to the foliage that could certainly be referred to smoke.

Q. If there was smoke damage down there then in any considerable quantity, you were not conducted to where it was, is that what I understand you to mean?

A. I did not see it on these trips if it was there.

Q. I believe you stated that you worked southwest mainly from Ducktown and Copperhill, towards the Vestal property?

A. No, I did not intend to leave that impression. I made a trip at a greater distance southwest, but there were about two trips made into the Southeast that are not platted on my map.

Q. That was the trip you made up the Toccoa River, isn't it?

A. One of the trips was across the North Carolina line, and another which is not platted on here was made——

Q. Mr. Reese was with you on that trip?

A. He was with me on that trip.

Q. You——

A. I can tell you exactly, if you will wait a moment. In January I made the second trip into the region by some different route, which would take me some time to locate, but Mr. Reese can give you the exact location.

Q. On that trip, just speaking as up the river, you know what I mean by that?

A. Yes, sir, up the Toccoa River.

Q. On one of your trips up there, on that trip that you made, was not the smoke so bad that morning that you could not take photographs, the sulphur smoke?

1367 A. No.

Q. Did you make a trip up the river in June with Mr. Reese?

A. No, not up the river.

Q. Were you anywhere over there taking photographs when the smoke was so bad that you had to abandon the taking of them on account of the smoke?

A. No, some of these, there was smoke on the 8th, on that trip.

Q. The eighth of June?

A. The eighth of June, last. On that trip the Paintertown section, that is photographs my numbers 538-539 and 540, were gotten at the point indicated on the label. I was in there, and saw the condition of the air at that time.

Q. Did you ever at any place or at any time, when you were out with Mr. Reese, taking photographs, have to quit taking *taking* pictures because the smoke was bad?

A. One time.

Q. When was that?

A. That was on the morning of October sixth, 1913. I had a comparatively short time between trains to get pictures. My exhibit No. 83, that is my number, 79 was gotten on that morning in Quinn's orchard, and well—well, I stated awhile ago that I had to stop. I really did not stop, but the nearest I came to being interfered with was on the way to that point the smoke was pretty dense. It cleared away before I got to where these trees are shown in that view.

Q. Did you smell the smoke particularly strong that morning or that day?

A. I am not sure. I made no memoranda of that point. Let me see, I made no record of it, but I think probably I did.

Q. I believe you said you went over to Fentress County

1368 and on the Cumberland Plateau on one trip, did you?

A. I am not sure it was Fentress County, I went on one trip to Monterey and Wilder on the Cumberland Plateau, and in and around Harriman and vicinity.

Q. The conditions of the forests are pretty bad over there?
A. Pretty bad.
Q. It was not normal was it?
A. I should not call it normal, not, that is, that the forest was in a healthy condition.
Q. How many miles from Ducktown is that section of the Cumberland Plateau?
A. I am not sure, I think,—it must be, as I stated on direct examination when the question was put to me, I guess it must have been at least 150 miles, air line.
Q. Professor, is there not millions of fine, healthy forests between Ducktown plant and that Cumberland plateau?
A. I am not sure.
Q. And to make a comparison with this North Georgia section you would not want to see a good healthy forest to get your samples from, would you?
A. Comparison, what kind of samples, may I ask?
Q. I mean for comparison, general pictures and wood, and everything like that.
A. Well, it would depend upon the point of view from which I would want to make the comparison.
Q. What I meant by that, won't the North Georgia section show up mighty badly compared with a good, healthy, normal forest?
A. I think it would.

1369 Examination by LAMAR HILL, Esq.:

Q. 1. Professor, are you familiar with the action and effect of sulphur dioxide on leaves of trees?
A. I think I am.
Q. 2. What appearance do the leaves of the forest trees have after an attack or after being brought into contact with sulphur dioxide?
A. I stated on direct examination that the effect is manifested in different ways on different species of trees, depending in part on how long after the fumes had struck the leaves and on the species of trees.
Q. 3. My question was intended to be general, not specific, if you can answer generally as to general forest trees, the leaves of general forest trees, what is the general effect of sulphur dioxide on it, not any specific tree?
A. What is the physiological effect, it is to retard the function *the function* of the leaf.
Q. 4. I asked as to the appearance.
A. The appearance? Well, a very sever- injury would result in defoliation.
Q. 5. As to the first appearance, of any attack on the leaves, what is that, generally speaking?
A. The first appearance of a severe poisoning by sulphur fumes, would be to completely kill the whole leaf if a sufficient amount of the fumes struck it to produce the effect. And then a slower effect would be to produce a gradual discoloration, resulting in different

classes of discoloration of the leaf, and if the action continued it would turn brown.

Q. 6. There is no definite portion of the leaf where the effect is first indicated?

A. No, sir, in the case of pines it is very certain to make its first appearance on the tips of the leaves, by paling in color,
1370–1379 and then if the application begins in a small amount the region of the tips and finally the dying and browning of the tips.

Q. 7. The maple, I believe you state the maple in one of the hardiest of the trees as to resisting the effects of sulphur dioxide?

A. Yes, sir.

Q. 8. As to the maple or oak leaf, is there any uniform place for the effect to be first apparent?

A. The appearance of spots is liable to be scattered over the oak leaves, generally and maples around the margin of the leaves.

Q. 9. Now, Mr. Bain, are you familiar with the effect of frosts on the leaves of forest trees?

A. I have seen the effect of forst in some instances.

Q. 10. What is the effect of frost as to the appearance of the leaf?

A. Frost is liable to kill the portions of the leaf first exposed, for instance the action of frost would be manifested on the unfolding leaves, you have leaves opening from the buds, in different ways, exposing different portions of the leaf. In the case of a pine, for instance, the pine leaf growing out, the tip first, frost would be more apt to kill the tips of pine leaves. In other cases, whatever portion of the leaf is first exposed to the weather. If the middle portion of the leaf appears first, the frost would attack the center then run to the tips.

Q. 11. Then, as I understand you, you say there is a difference in the apparent effect of the sulphur dioxide on the leaves, and the apparent effect of frost on the leaves of forest trees?

A. In many instances by inspection it would be impossible, from just an examination of isolated samples to tell which of the
1380 the two injuries, I mean which of the two agents were responsible for the injury. If you could get a sample early enough in the stage of the growth of the leaf, that is soon enough after the frost action, the frost freezes the water in the cells and ruptures the cells, by microscopic inspection you can determine whether it was frost injury.

Q. 12. That would have to be done immediately after the frost?

A. Not immediately.

Q. 13. Well, then, while the leaf was still in the frozen condition?

A. No, before the leaf is completely dried out.

Q. 14. Later on there could be be no method of differentiating between the two?

A. I am not sure as to whether the method will succeed in thoroughly dried out leaves.

Q. 15. Now, with regard to the action of sulphur dioxide, and

particularly that emitted from the stack of the Ducktown Copper Company, it does not affect uniformly the whole territory, is that true?

A. That is true.

Q. 16. It is likely to affect a piece of timber land here or a tree here, and then skip for some distance and affect another tree or a group of trees, is that true?

A. That is true, with this understanding, that is, there are certain conditions, there are other conditions affecting the injury of smoke than the mere amount of sulphur fumes in the air, for instances it would depend on the location of the tree, the amount of moisture there, and its exposure to light.

Q. 17. I am talking of those conditions, taking all of them into consideration, and all other conditions there would be no uniform effect, it would be as I have stated on any section of the forest in a section of the country?

1381 A. That would be true, I should say, but a comparatively narrow scope.

Q. 18. There is no forest or section of the country where uniform conditions exist as to each tree in each forest, as regards moisture, location, condition of foliage, etc., is there?

A. I should think there is, there are forests where you could consider all external conditions practically uniform. There is another effect that enters in there, and that nobody is able to explain, and that is the effect of the individual resistance of trees to smoke.

Q. 19. Then trees are like human beings?

A. Some extent, and some may stand it and some may not.

Q. 20. They are like humans?

A. Like human beings.

Q. 21. Some trees have a resisting power and more vitality than others?

A. Yes, sir.

Q. 22. Now, if the conditions were uniform, leaving that out, how do you account for the fact that sulphur dioxide strikes a tree here, and another one yonder, and a couple of trees in still another place, and between these points of attack there may be trees not attacked?

A. That would be explained principally by the direction of air currents, I should say, carrying the fumes and the protected positions of certain trees. These air currents some times jump over, and they will in passing over two ridges strike the top of one and then jump to the top of the next ridge, and in case of a stream running between the ridges, it is possible for the currents to carry the smoke around the ridge and carry ip up the intervening valley, and injure the vegetation when the trees on top of the ridge would not be,

1382 and that is accounted for by the fact that most of the damage is done in moist atmosphere, it is more apt to kill, increasing in proportion to the moisture, the poisonous effects of the fumes.

Q. 23. Then the location of trees, the protection offered by other trees, I will ask you if it is not true, that other trees can afford protection to a tree, being higher and more densely foliaged in leaf?

A. That is true in dense forests, the edge of the forest directly facing the fumes would have the tendency to be injured first and the trees and the dens foliage inside would deflect the air currents and delay the movement of the smoke ladened current.

Q. 24. Then as I understand the protection afforded by trees, mountains, or ranges, or in other words the location of a tree, and any difference in h-ighth, in vitality, between it and another tree, the difference in species of trees, all of those things must be taken into consideration in determining whether some trees may be attacked and other not?

A. Yes.

Q. 25. And air currents and conditions of the atmosphere?

A. Yes, sir.

Q. 26. You do not intend to say by your evidence that there is no damage done in Georgia?

A. I do not, that is, that there has no damage been done.

Q. 27. Well, I will ask you whether you intend to say by that evidence that there is no damage being done in there?

A. I testified on direct examination I found evidence of damage this month. That is to foliage you mean, the immediate effect?

Q. 28. Yes, the primary effect. Now, professor, let us go just for a moment into the evidence that you gave on yesterday as to the life of a tree; I understand you to say that a tree de-
1383 rives its sustenance from two sources, first from the roots, or from the roots to the tree?

A. There are two avenues by which nutrients enter the tree.

Q. 29. The roots as I understand, take up the minerals from the ground, together with the moisture from the ground, and send them upward through the tree into the leaves, and then through them into the air?

A. They start them in that direction, that is the moisture passing into the air, the mineral nutrients remaining in the tree.

Q. 30. Forming the food or nutrient for the tree?

A. That is right.

Q. 31. And the leaves, as I understand are used to take in from the air the various chemicals which are converted into nutrients for the tree?

A. The leaves have breathing pores through which carbon dioxide of the air enters, that combines with the water in the body of the tree, that combination being made in the chlorophyll, and assist in the manufacture of the chemical food of the tree. And the leaves are also the principal agents exposed to the air, through which oxygen enters the tree, they are used for breathing.

Q. 32. They are then, the lungs, the mouth in a certain sense also?

A. They are the lungs and in a certain sense the mouth, yes.

Q. 33. They perform the double or triple function of the mouth, the lungs and the stomache for digestion?

A. Now, the more modern view of plant physiologists of digestion is that it is to make the food, that the digestion of the stomache of the human. For instance, we take into the mouth starch food which

we add to by moistening, with saliva, and certain other
1384 liquids, and they are in turn converted into sugar. In the plant the leaves manufacture their own food, the digestion should very properly be the same process by which corresponding chemicals render the starch soluble so the plant can use it for food. The fundamental difference between the green plants and the human beings, in that sense, is that the green plants are able to take the raw materials of the atmosphere, and animals and some plants are not able to do this.

Q. 34. Now, then, there is no — important part of the tree than the leaves?

A. That is true.

Q. 35. And the roots of the tree, of course are underground?

A. Yes.

Q. 36. And in a way are protected?

A. You mean from sulphur fumes?

Q. 37. From the exterior, from injury from the outside.

A. Well, there are certain diseases that are known to attack the roots of trees.

Q. 38. I do not mean diseases, attacks from the gases and other infections above ground, they are purely local, the affections that attack the roots?

A. Yes.

Q. 39. No gases that may be in the air, the leaves are the most exposed and susceptible parts of the tree to injury?

A. Yes, sir.

Q. 40. If sulphur dioxide settles on leaves, crisping the-, browning them, and burning them, it takes away from the tree what percentage of its nutrients,—I will put it in a different way, what percentage of the nutrients of a tree is furnished by the leaves?

A. Well, by far the greater part of the nutrients which enter into the material sustenance of the tree.

1385 Q. 41. Injury to the leaves, or death to the leaves would affect the tree a great deal more than death to the roots, of course either would kill?

A. It would be pretty hard to say, we might say that any single agency that enters into the life of the plant, if it is removed the plant will die, for instance if you remove the iron, it will die, if you cut off the lime it will die, if you cut off the carbon-dioxide, it will die.

Q. 42. I understand but speaking relatively,——

A. Speaking relatively, I consider the leaves the most important organs of the plant.

Q. 43. Then if the leaves were killed, no matter if the roots were living, there would be an entire death to the tree?

A. The plant has a certain power of regeneration of leaves. If you have enough matter left in the way of food they will live. Further, when the frosts kill the leaves in the fall the tree does not die.

Q. 44. That is after the functions of the leaves are performed for the season and the nutrient for the coming winter is stored?

A. Yes, sir.

Q. 45. But if they are killed in advance of the natural time for dropping off, before the tree has completely stored its nutrient——

A. The trees very frequently, or occasionally, I might say, and naturally, all of the leaves of the tree are killed but if they have a store of nourishment packed away to start them again, as soon as the new leaves are put out just enough to expose the surface, and the cause of the injury has not proceeded too far, the leaves are able to begin to manufacture food, then the tree will begin its growth again. Not only the leaves, but all the fresh shoots, and you may say back for several years on the growing branches, furnish
1386 food. The chlorophyll on the branch, everywhere you see the green layer just below the bark, if the leaves be killed there might be enough left of that on the tree to sustain it.

Q. 46. Would you say a tree living under those conditions would be as prosperous as a tree performing all its natural functions?

A. No, sir. It would be shown by the growth of the season, it would be reduced.

Q. 47. Then, if the leaves are exposed to contact, or brought into contact with sulphur dioxide, the degree of the affection would in a way impair the functions of the leaves, and affect the growth of the tree?

A. No, I do not believe that would be true. It is generally known, that is, it is a general principle, in the action of poisons, that a very minute dose will stimulate almost any vital function.

Q. 48. You misunderstand my question, I was not speaking of the percentage of poison in affecting the substance, but I was speaking of the attacking substance as of the given strength of poison, the attacking strength which would be injurious, any attack of that kind, of a given strength of poison that would impair any of the usual functions of the leaves, would affect the growth of trees?

A. Well, I do not believe that would be true. In the first place, it would depend on the length of time that the leaves were attacked by the poison if it was of sufficient strength to injure, if of very brief period, the leaves would suffer no appreciable injury, but if for a sufficiently prolonged period, they would suffer injury.

Q. 49. I am speaking of an attack in which they would suffer injury, even a slight injury, that would impair the functions of the leaves, and have an effect on the growth of the tree?

1387 A. It would effect the impairment of the functions of the leaf, but not necessarily on the growth of the tree.

Q. 50. Does not the impairment of the leaves affect the growth of the tree?

A. Not directly. Indirectly, that is the fact, if the tree be affected for a sufficient length of time to exhaust the store of nutrients which it has in store, it might affect the growth sufficiently to register an undergrowth.

Q. 51. But if it had sufficient store of nutrients, would it not loose the nutrient which would ordinarily be stored by the leaf in its performance.

A. It would.

Q. 52. Then, it would affect the growth of the tree?

A. Not the growth, but food manufacture of the chlorophyll. It is like the food that the boy eats as compared to the amount of food the mature man eats. If I ate the amount of food which my six year old boy eats, such would injure it, he grows and I do not.

Q. 55. But the tree is in this growing state at all times?

A. I used that point to illustrate the fact that there is a difference between food manufacture and growth. For instance, a plant grows more rapidly at night that it does in the day time, but it manufactures no food at all at night, and the growth of trees is naturally independent of food manufacture.

Q. 56. However, it uses the food which has been manufactured in the day in its growth at night?

A. Yes, it does that.

Q. 57. There could be nothing at all in the physical construction of the tree except the food which it takes in from the outside through the ground or air?

A. That is true.

Q. 58. Then that is all it has to depend on for its growth?

A. That is for its food.

Q. 77. How long does a tree grow, up to what age?

A. It grows as long as it lives.

Q. 78. It never quite growing until it dies?

[1059] A. If a tree stops growing, very soon it is dead.

Q. 79. Now, professor, the attack of anthracnose or other poisonous gases upon the leaves would have an effect upon the rest of the tree also?

A. If it affects the leaves.

Q. 80. If it affects the leaves it would have to affect upon the rest of the tree also?

A. There would be a difference of growth, there would be an accumulation of growth, naturally, between the trees and the leaves.

Q. 81. I believe you said on yesterday, that the food manufactured in the leaves were sent to the roots as nutrient to the root?

A. A reduced growth would very probably, at least be associated with a reduced growth of the roots.

Q. 82. Would it not be a relative reduction?

A. There is a certain accomodation between the two functions.

Q. 83. Professor, what effect in the preservation of soil in tree leaves, or rather, what is the function of a forest in the preservation of soil and land?

A. Well, a forest, of course, I am not a soil specialist, but I suppose to know enough about that to answer the question. It has in the first place protects the soil from washing away, that is the leaves on top, and its underlying roots would tend to bind the soil together. And in the second place, the addition of falling leaves and twigs from year to year forms vegetable matter which furnishes what the soil chemist knows as humus in the soil. Then also, a forest under normal conditions helps to hold the water in the soil and prevents its escape into the air.

Q. 84. Then the presence of forest is absolutely necessary to the life of the country?

A. I think I could.

Q. 75. How could you do that?

A. Well, if we see a tree that is not uniformly circular in outline, and asymmetrical, that is on one side it has grown more rapidly, if it is appreciable to the eye, that means that the annual rings on that side over a considerable number of years have been uniformly thinner. If anything has happened to retard the growth of the ring on that side, there would be reduction in its size in the same proportion on the other side, and the section from that region would show much more reliably the growth.

1391 Q. 76. You say the rings on the larger side would show the general diminution on the other side?

A. Not generally no.

Q. 77. If you see only the large side, how could you tell whether on the other side it had been injured?

A. Well, I have examined enough sections of trees to be convinced, personally, of the reliability of the method and of the correctness of the statements I have made.

Q. 78. I know, but I am asking you now to explain how you satisfied yourself as to the correctness of that method?

A. I have examined a sufficient number of stumps to know it is.

Q. 79. Professor, do you mean to say you must see the tree from which you take your section, before this section would be as reliable as if you had the entire section from across the tree?

A. That would depend on the relative amounts, the proportion of growth checks. Where the growth check is very marked, the tree, at any point above the roots, up the trunk with-in reaching distance, I mean to say, as high as two or three feet above the root, then it would be within easy reach of a man's hand, would register, would show if there is any marked reduction of growth over the tree.

Q. 80. Is not all of that dependent upon the side of the tree from which the section is taken, and must not you see that tree?

A. Not if the growth checks are striking at all, that is if the tree is very much checked, the section taken from any part of it would show this reduced growth.

Q. 81. Then, I will ask you if you ever saw a tree in your life where the annual rings were uniform around the entire section?

1392 A. Well, I have examined quite a number. It would depend of course upon what the uniformity,—what you mean by uniformity, if you get down to microscopic sections and measurements, you would find a difference in going around the tree.

Q. 82. I mean if you looked at it with your eye, in going around a section from across the tree, if you looked at it with your eye, would the distance between the outlines of each ring be the same, uniformly around the section from start to finish?

A. Generally you will find a difference as you go around the tree.

Q. 83. There would be a difference?

A. If the tree is one of rapid growth, for instance a white pine, where the annual rings are thick enough to see them distinctly, in many cases, for instance, the hemlock, the hemlock grows much more

slowly than the white pine. I remember to have examined one, probably 260 years old, and the growth was very slow, and I think it is very improbable that in the normal hemlock the eye would detect any difference. In white pine which you speak of, you would be able to distinguish the difference.

Q. 84. Then, is not that true in the majority of forest trees?

A. There would probably be a difference.

Q. 85. Then, Professor, I will ask you, if you can tell as well from a portion of the section across the tree as from the entire section across the tree?

A. If it was a question of very slight difference such as we should see under ordinary normal conditions in the forest, a single core taken out at random, would probably not be as reliable as the section across the entire tree.

Q. 86. Is not that same thing true with a portion of the section, as it is with the core?

A. Not a portion as large as the sample you have here.

1393 Q. 87. Take your exhibit No. 66, and tell me if there is not a difference in the distance between the annual rings in one portion of the section and another portion?

A. There is.

Q. 88. Is it not a considerable difference?

A. There is.

Q. 89. As much as one hundred per cent in some annual rings?

A. There is, just a moment, one hundred per cent, there is.

Q. 90. Now, what affect, professor, you state a tree is somewhat like a human being in regard to its vitality and its resisting power against the disease, what effect does the lowering of the vitality of the tree have on the life of the tree, or the growth?

A. It reduces its growth.

Q. 91. It reduces its growth?

A. Yes.

Q. 92. Does it also lower its resisting power in proportion to the lowering of the vitality?

A. Resisting power to what?

Q. 93. To attack of diseases, insects or any other thing that might attack trees?

A. Lower its resisting power by smoke?

Q. 94. Lower its resisting power to attack by poisonous gases, or from posionous gases, from insects or any other disease that would ordinarily attack trees, such as fungus?

A. It is a mooted question among the specialists who have investigated this question as to whether a smoke injured forest is more or less injured by insects, some contend it is more injured by them, and some less, so that at the present state of knowledge on the question, it would render a definite answer to this question impossible.

1394 Q. 95. A definite answer you say is impossible?

A. It is not a decided question, as regards this.

Q. 96. You could not give a definite answer yourself?

A. As regards its relations to fung-us diseases, it might render the plant more susceptible, and probably does in some cases, but in other

cases, there can be little doubt but that it renders the plant more resistant to certain diseases.

Q. 97. Smoke you say renders it more resistant to certain diseases?

A. I think that very probable.

Q. 98. As to the forest trees of North Georgia, I will get you to state whether or not that does not render them more liable to attack and more susceptible to attack from insects and from fungous.

A. I have seen no evidence that it renders them either more susceptible to insects or to fungous diseases, the fact is I have seen, in my personal knowledge more damage by insects in other sections than there.

Q. 99. I am speaking of the possibility professor, of it rendering the forests more liable to attack from fungous and insects?

A. I could not answer that question, definitely, because it is a general question that scientists are not agreed upon.

Q. 100. Now, that applies both to insects and diseases?

A. Applies to fungous also.

Q. 101. As to disease, does it lower its resisting power?

A. It probably would under certain conditions, but as I said awhile ago, I know personally, through either study of the subject, or knowledge, nothing that would indicate that it renders the tree more
1395 susceptible to fungous diseases. I have evidence of my own observation, as I stated awhile ago, that it probably renders some plants, for instance, a peach, more resistant to fungous diseases.

Q. 102. That is a very hardy tree, as regards it- resistance to sulphur dioxide?

A. It appears to be.

Q. 103. You used two terms on yesterday, I want to ask for a little information, exactly what you mean, you say natural causes of the death of trees, what do you mean by natural causes of the death of trees?

A. I mean death from old age, from lightning, from insects, from fungous diseases, and possible we may say from drouth, that is any other agencies than the agencies of man, such as injuries from fires or fumes.

Q. 104. Are natural causes, professor, causes which arise from the nature of the thing about which you speak?

A. That is not the sense in which I use the term.

Q. 105. That is what I have not understood. Then you mean by natural causes, as you say, anything which arises not from the agency of man?

A. Yes, sir.

Q. 106. You spoke yesterday of the physiological conditions existing in forests, or around trees, what do you mean by physiological conditions?

A. I used that term in connection with the top dying of trees in isolated positions. I mean by that, trees growing in forests, which have had the other trees removed from around them. I have by my own observation seen trees that appeared to be perfectly healthy,

otherwise, dying at the top. It is a well known fact, that darkness or diminution of light, or illumination, increases the usual growth in length of any plant, like a tree. So, that a tree growing in a forest, surrounded by numerous trees, grows much taller of
1396 trunk than trees grown in the open. It grows very rapidly in length puts out branches at frequent intervals, and these branches are very soon shaded in the growth of the tree by other branches, so after a while, after being unable to reach the light, there is a self-pruning of the tree, that is, these branches which bear leaves which cannot reach the light soon die and the young forest shows numerous dead branches up and down the tree. Now, if the tree had grown up in the open, these branches would remain on for a great length of time, and would form a rounded tree. Now, if there is an accommodation between the growth in length of a tree and the amount of branches and the distance apart of those branches on the trunk of the tree in the same way, it is my personal opinion, that if you remove the forest growth from around the tree, that the lower branches which had then been shaded by the others will begin their functions and grow vigorously and the tree will not have need for the top branches, so it will automatically, physiologically die.

Q. 107. You have addressed yourself to top dying of chestnut, but generally, what do you mean by the term "physiological," when used in the connection in which you used it?

A. Well, that was the connection that I understood that I used it in.

Q. 108. I will put it this way, what do you mean by a physiological condition as applied to trees, do you mean an automatic condition, or natural condition, or method of nature by which the tree prunes itself of branches?

A. I used that term, physiological in con*d*radistinction to pathological, that is the diseased condition, in the true sense of the word, any conditions that are not normal.

Q. 109. Would not conditions existing in forests which
1397 had been attacked by sulphur-dioxide, be physiological?

A. No, I should say that trees in forests where there had been a sufficient sulphur smoke to produce any injury, or any interference with the normal growth of the tree, or course of its life, would be a pathological rather than physiological one.

Q. 110. Then, you use physiological, as applied to the method or correction of disease by the tree itself?

A. I do not see how I can make it any clearer, but here is the point, an organism goes along a certain course through its life, and it is performing its functions normally.

Q. 111. In the growth of a tree, I believe you state it was by the formation of cells?

A. Yes.

Q. 112. The light cells you showed us in your exhibit No. 73, the light spots are what you call the spring growth?

A. Yes, sir, the larger cells.

Q. 113. The larger cells indicated by the large light spots are the spring cells?

A. Are the beginning of the spring growth, in each annual ring.

Q. 114. In a tree growing normally, do the spring cells predominate over the autumn cells in number or not?

A. Well, I could not answer that question definitely, I do not know whether it has ever been investigated by anybody of not.

Q. 115. I will ask you to state whether or not in your opinion, I believe you stated on your direct examination, in your opinion the growth for 1906 was normal.

A. I did.

Q. 116. Then would you say that the growth for 1913
1398 was normal?

A. I should.

Q. 117. I will get you to state whether or not the spring or autumn cells predominate in 1906?

A. In the growth for 1906, the spring cells.

Q. 118. In the growth for 1913, which predominate?

A. The autumn cells. (Examining the photograph for the last two answers.)

Q. 119. From which source, the roots of the tree, or the leaves, do the autumn cells come, or gain the larger part of their nutrient?

A. They get the greater part of,—in fact the material out of which the cell walls are made, comes up, with the water from the roots,—about equally from the roots and the leaves.

Q. 120. What would be indicated by the preponderance of autumn cells in the annual ring over the spring cells?

A. Nothing.

Q. 121. Nothing at all?

A. Nothing.

Q. 122. You would say that would be as normal as the other, for either one to predominate?

A. I have examined that section in regard to the number of cells, I have gone over that pretty carefully, in connection with this investigation, and there is not enough difference between the number of the spring and autumn cells to indicate anything definite.

Q. 123. Well, then, why is there a variation of spring and autumn cells in any one year?

A. That question would be pretty hard to answer, I do not believe that any botanist could give a definite answer.

Q. 124. It shows some difference in the condition?

1399 A. Some difference in condition, may be internal or external, no body has investigated the question.

Q. 125. What effect would a wet fall have upon it?

A. It would have a tendency to prolong the spring conditions.

Q. 126. I will get you to state whether or not an attack by sulphur-dioxide over either a spring or fall growth would have the effect to check the growth?

A. None that I have been able to find.

Q. 127. I believe you say that the cells draw their sustenance both from the leaves and the roots?

A. Yes, sir, the nutriment is manufactured in the leaf. The leaf is responsible for the combination of carbonic acid and water, and the plant manufactures its food in the leaf.

Q. 128. But where is it done, then, if the leaf is attacked in the spring, it would have a tendency to diminish the growth of the spring cells?

A. Yes, if the leaf were taken off it would be, I do not know about affecting the autumn conditions.

Q. 129. Any injury to the leaf, regardless of whether effect was destruction to the leaf or not, there would not be any nutriment made by the leaves during that period of time?

A. Not during that period.

Q. 130. Now, professor, you spoke of the top dying of chestnut trees. I will ask you whether or not an attack of sulphur dioxide could produce that?

A. I think it could, yes, sir.

Q. 131. I will get you to state whether or not sage grass which grows in the vicinity of the Ducktown plant is a hardy plant?

A. Yes, sir.

1400 Q. 132. Is it very hardy?

A. I think so.

Q. 133. One of the hardiest plants that grows.

A. I think it is.

Q. 133. Now, professor, you stated that you found dying timber in the Cumberland plateau, and in North Carolina, of course you do not mean to say that it is not possible for forest in one section of the country to be killed by one cause and in another section by an entirely different cause?

A. That is true.

Q. 134. There can be just as much difference as there is between diseases in different parts of the country?

A. That is true.

Q. 135. And to what did you attribute the death of trees in the Cumberland Plateau?

A. I stated on direct examination that the chestnut trees were dying from causes that I did not know, yet evidently from natural causes, that the hemlock trees were probably dying from insect attacks, because I found one there at one point that had evidently been killed by the beetle, and that the white pines were dying from some cause which I did not recognize, evidently from some natural cause.

Q. 136. What is the resisting power of hemlock as compared to oak and chestnut?

A. To what?

Q. 137. To, say, the attack of sulphur-dioxide?

A. The hemlock is very much more sensitive than either oak or chestnut.

Q. 138. The thin sap wood trees are the ones that are most easily affected than the thick ones?

A. So far as I know there is no relation between the thickness of the sapwood and the power of resistance.

Q. 139. What is the power of resistance of all evergreens
1401 as a class, as compared to chestnut and oak?

A. Well, I have not made any observations that would enable me to tell how resistant holly is. Holly is, so far as I know, the only one of what botanists know as dicotyledonous that are known as evergreens. I presume by ever-green you mean what botanists know as conifers,—hemlock, pine, spruce, etc. As a class, conifers are considerably more sensitive to sulphur fumes than any other forest tree.

Q. 140. These trees carry their leaves the entire year, and are storing nutriment during the entire time?

A. No, that they are storing nutriment during the time when the temperature conditions are favorable, on the other hand, in cold weather, they do not, but they are alive during that period, and during the winter season, during the cold weather, at least when the growth cannot occur, they are quiescent, they are non-functional.

Q. 141. Well, the leaves are out, that is they are,—well the leaves of any tree are out and are susceptible to injury by sulphur dioxide attack then more so than when there are no leaves?

A. Well, that is the tree is more susceptible?

Q. 142. Yes?

A. Yes, sir, that is true.

Q. 143. Then an evergreen is more susceptible to injury as to time than any other tree?

A. The best explanation that has been given for the power of resistance by conifers is that in some manner which we do not understand they lack what we know as power of regeneration or recovery from injury, that is, if maple leaves are injured, for instance, by smoke, sufficiently to take them off, the maple tree has
greater power to put out more leaves, than pines and coni-
1402 fers generally, which have not this power. That is the best explanation I have.

Q. 144. You said on yesterday that you made a study of the effects of copper compounds on leaves, and your study of that had been of much longer duration than on the action of sulphur dioxide?

A. That is true.

Q. 145. You do not mean by that that you had studied the effect of copper fumes from these plants?

A. Not in that investigation.

Q. 146. You stated that copper compounds are used in the spraying of trees?

A. That is true.

Q. 147. You compared that to the action of poisons on the human system, as to dilution?

A. I do not remember whether I made that latter statement or not.

Q. 148. You stated that a small dose of poison would be bene-

ficial rather than injurious, and if you gradually increased the portion, it would become more and more injurious?

A. I do not remember to have said that.

Q. 149. Is that or not true?

A. That is — one sense of the word true, and in another sense it is not true. It is not the quantity, it would depend on the rate of increase of the dose of the poison. Plants are just like human beings in that regard, you can start in with a man with a very small dose, of almost any poison in the case of morphine, for instance, and gradually increase that dose to a very large amount.

Q. 150. You meant that and not gradually increasing the dose, but where a small dose of poison in solution would not be injurious, a large dose would be injurious?

A. That is true.

Q. 151. You say that in some cases that the spraying of
1403 trees with these solutions injures the trees, but that the benefit derived by the tree, generally overcomes the injurious effect to the leaf?

A. That is true.

Q. 152. Is not it true, if that tree was sprayed continuously for some time, that the injurious effect to the leaves would, in time, overbalance, or out-weigh, the beneficial effect to the tree from the spraying?

A. I do not believe that is always true. It is a known fact, for instance in spraying with the Bordeaux mixture, a portion of the leaf may be injured by the copper, whereas the entire portion of the leaf, would not be and the other portions of the leaf which have not been injured would function more actively, store up more food while the rest would be killed, so that the average effect on the whole tree might be beneficial, and may so continue over a long period of time.

Q. 153. Could not the poison be applied in such quantity or such length of time that it would finally injure all the leaves to such an extent that the benefit derived would not equal the injuries?

A. Yes, because it could be sufficiently increased to equal the benefit.

Q. 154. Do you know, Professor, what percentage of sulphur dioxide is injurious to plant life?

A. The smallest percentage that the German investigations have found, within closed boxes on the European spruce, was one part to a million weight of air. This, however, is not true under natural conditions, and the more recent investigations have shown that out in the open a plant may stand a very much higher percentage of sulphur dioxide than that, so that the problem or ques-
1404 tion under the varying conditions in the open is very difficult to solve.

Q. 155. What would you say would be the effect of one part of sulphur dioxide to 100,000 of air?

A. It would depend upon the plant upon which it acted, the frequency of the application, the condition of the atmosphere, and also with respect to light and moisture.

Q. 156. Would or not that be injurious to the forests, particularly as you found them in North Georgia?

A. I could not answer that question.

Q. 157. You were speaking on yesterday of the falling of the leaves. I will get you to state whether you stated in answer to General Fowler's question, that after the leaves were blighted, the tree would not grow, except if it had stored nutrient, is that true?

A. I do not remember to have said that.

Q. 158. Is that true?

A. It would depend on whether the leaves are entirely destroyed. If they are entirely killed, and there is no nutriment left in the tree, then,—well, even in that case, as I stated awhile ago in answer to a former question you asked there is the chlorophyll under the bark of the young twigs, that under normal conditions would be sufficient to store up food to start the growth of the tree.

Q. 159. Then you could not tell from the growth check from the annual rings when the trees were blighted, is that true?

A. Well, for a short period it might be true. But it would be almost certain to show a growth check in the year.

Q. 160. Sulphur fumes, of course, cause growth checks, sulphur dioxide, as you have it here?

A. Yes, that is so.

Q. 161. You spoke on yesterday of determining several
1405 questions from the facts of the smoke history as given you, by whom were those facts given you?

A. Some of those facts I obtained from conversation with Mr. Reese, some with Mr. Renwick, the General Manager of the Ducktown Sulphur, Copper & Iron Company, some by correspondence with Mr. Miller, counsel for the Company, I do not remember whether I have gotten those statements from anybody—else,—there is Mr. M. O. Cate of Chattanooga, who investigated the Court records there and informed me of the date of the operation of the old Pittsburg Company, I got that through Mr. Miller, I believe I applied to him for the information direct.

Q. 162. Now, all these samples you got from trees, sections, cores, you say you found some that showed growth checks as far back as 1901?

A. Yes, sir.

Q. 163. Can you tell from, how far from the plant these trees were?

A. From the plants?

Q. 164. From the plant, I mean the plant of the Ducktown Copper Company.

A. In this case you mean?

Q. 165. Yes, on the one that you found in 1901?

A. I do not believe I found any nearer to Isabella than five miles.

Q. 166. That is the 1901 check?

A. Yes, I am not quite sure about that, however.

COPY BOUND

Q. 167. Will you tell me approximately how far from Isabella you found growth checks in 1906?

A. From Isabella?

Q. 168. Yes?

A. That was in Georgia?

Q. 169. Yes?

1406 A. I found, I believe the farthest point is where Tumbling Creek crosses the Georgia line, that is from Isabella. I think that must be about nine miles from Isabella.

Q. 170. How far did you find the ones which had the growth checks in 1908?

A. I have on my list here recorded one check that began in 1908, and that was somewhere along the road between Copperhill and No. 20 copper mine, if I can remember.

Q. 171. About what distance from the plant at Isabella, if you can approximate it?

A. I think about seven miles.

Q. 172. Approximately seven miles?

A. Approximately that.

Q. 173. You say that as a botanist your reason in determining on the death of plants, etc., both from the physiological condition of plants and the surrounding conditions in viewing the North Georgia district, you will take in to consideration the presence or the proximity of the copper plant of the Tennessee Company and the Ducktown Company, would you not?

A. I would.

Q. 174. The leaves which you submitted here as exhibits, did you examine them microscopically for evidences of fungous?

A. No, I did not.

Q. 175. What season of the year was that specimen Exhibit number 67 taken?

A. That was on the 18th of October.

Q. 176. When these last color photographs which you introduced, you did not give the general direction in which you went to take those, I will ask you what the general direction was,—the ones on which Mr. Reese was with you, the general direction

1407 in which you were traveling from Isabella?

A. That refers to the exhibits made in the Jack River country, does it not? Among the hemlocks and other timbers?

Q. 177. Yes?

A. I have marked it on the map, that is about,——

Q. 178. The direction, professor, not the distance?

A. Southwest.

Redirect examination.

By J. A. Fowler, Esq.:

Q. 179. You were asked something about what per cent of sulphur dioxide would injure plants, how were those tests usually made to determine what percent of solution in the atmosphere of a poison will injure plants?

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A. The only investigations that I am familiar with have been made along that line, so far as I know have been made in inclosed glass boxes, and the plants growing within these boxes, and certain strengths solutions of sulphur fumes of the air have been introduced into these boxes and the observation made.

Q. 180. Then, is or not the application continuous?

A. Experiments have been made, I believe with continuous percentage of the sulphur fumes, mixture of sulphur fumes with air, and also experiments with repeated applications and removals of these percentages in the attempt to reproduce natural conditions.

Q. 181. Would or not the conditions in the open atmosphere as the forests around and near Ducktown, which have been exposed to these furnaces or the fumes of these furnaces be quite different to the conditions of a closed box?

A. They would.

Q. 182. Now, you have been asked if the growth of trees
1408 is not different on different sides, and different parts of the tree in the same year, and your attention has been called to Exhibit 66, please explain that exhibit and state why you, if you have any reason, or knowledge as to it, why those rings are of different sizes in different parts of the tree?

A. The question as I understood it, had reference to whether a boring taken on different sides around the tree that had had its growth checked over a certain period by injurious fumes would show on each of these radii the relatively same percentage, or perceptibly the same percentage of reduction and my observation has shown that it will. And in this Exhibit 66, while it is true, as I have stated on cross examination that following in this hand sample any annual growth around, or at least some of the rings of growth around, there is as much as fifty per cent difference; at the same time, it shows on the same sample, that if an increment borer had been put in toward any radius from a point of the circumference, it would have shown similar results in judging the proportion of the reduction of growth.

Q. 183. Have you any idea why it is that the growth of a tree will be stunted on one side and normal on the other?

A. Well, there are mechanical conditions, perhaps. I had best modify the answer to this question just a little. I will change the answer a little, the proportional reduction would have been somewhat different, but the inspection of this sample shows distinctly that such borings would indicate at any single point, growth reduction beginning at the same year.

Q. 184. And extending for the same length of time?

A. Yes, let's see. (Examining exhibit.) Yes.

Q. 185. Does or not every part of that circumference show
1409 improvement during the years 1912 and '13?

A. Yes, sir, on this circumference, on this hand sample?

Q. 186. Yes, sir.

A. On the greater part of this sample that is true, on the ex-

treme left there is a space, a short distance where that would not be true.

Q. 187. State whether or not on the extreme left the growth for 1912 and '13 is not greater than for 1911?

A. So far as I can determine with the lens, any point on the radius shown during 1912 and '13 show- an imporved growth over that of 1911.

Q. 188. I believe I asked you, Professor, if you have any knowledge of why it is that a tree will grow more on one side during a season, than on another?

A. Well, that is a question that is pretty hard to answer*m* from physiological examinations, or other indications that certain internal effects are responsible for it, more than external, there are two or three that may modify the growth, for instance*s*, we find on a cross section of any tree taken near the ground, there is a gradual transition in conformity from the stem to the roots, in other words, the root deforms the stem, and the cross section is not circular, but going up two or three feet above the ground, we find, generally that they are circular in form.

Q. 189. Where a tree presents the appearance from the outside as being — well rounded, well developed tree, state whether or not it is generally true that the rings are regular on the inside?

A. Yes, sir, they are sufficiently regular to enable us to gain definite and reliable information on the subject of smoke damage with an increment borer, and that is the generally recognized tool in use in Germany for a number of years for that purpose.

1410 Q. 190. State whether or not you examined a great number of stumps which showed the entire cross section of the trees?

A. I did.

Q. 191. Did those entire cross sections that you observed indicate the same results that you have testified to here?

A. So far as I remember. I examined a great number of stumps with this specific end in view and satisfied myself that as a general rule there would be so little variation from this rule that it would be negligible when drawing my conclusions from a number of different sections.

Q. 192. You were asked what the effects on the tree would be if the leaves be killed, state whether or not the mere killing of the leaves once will kill the tree?

A. That generally speaking is not true, that is, it would not generally kill a tree, though there might be certain conditions under which it would kill a tree, that is, *j*owever, it would depend, of course, upon the agency which attacked the leave*w* and took them off, that is if a very severe fire struck the tree and destroyed the leaves, the whole tree might be killed.

Q. 193. Would not diseases that cause the leaves to fall off the entire tree kill the tree?

A. They might kill the leaves, the protoplasm we call it.

Q. 194. In order to kill the tree through the leaves, do or not

the leaves have to be affected a number of times or the effect be applied continuously over a space of time?

A. Sulphur fumes?

Q. 195. Yes, or anything else that will kill the leaves.

A. Well, there might be different results, depending on the character of the injurious agency attacking the leaves. In the case of a leaf fungus, in the majority of instances there would be recovery after once destroying the leaves. In the case of destruction
1411 of the leaves by insects, a tree will generally recover. In some cases, however, among the conifers,—the cedar, for example,—destruction of the foliage one time by the bag worm may kill the tree; though that is, generally speaking, so far as my observation has gone, the result of several years' attack.

Q. 196. Is it or not a fact that there are some species of trees whose leaves are entirly consumed by worms every year, and they still live?

A. There is one tree in particular, the catalpa, which I have observed in a number of cases, to be almost constantly, year after year, defoliated by the action of the larve.

Q. 197. You have stated, professor, that the forests of North Georgia, would show up badly in comparison with a healthy forest, why is that, explain fully what you mean?

A. Well, I meant as compared with a forest properly cared for, that has not been attacked by fires, has not had improper lumbering conducted in it, and has not been mismanaged, for instance, I have seen, I noticed one exhibit here, I do not remember the number, hemlock forests near Clingman's Dome, Sevier County, that I noticed and introduced, merely illustrating that particular point in connection with my study in that country, comparing that forest with the forest of North Georgia, the North Georgia forest would show up badly.

Q. 198. What were the troubles in North Georgia which you had particularly in mind?

A. Of course, I did not study the conditions sufficiently to account for all of the troubles in North Georgia forests, but I had more particularly in mind the fires for instance in the Jacks River Country, and which was brought about by improper lumber-
1412 ing.

Q. 199. Did you have in mind the damage committed by sulphur fumes from 1906 on up?

A. In some portions of it that I saw yes.

Q. 200. State whether or not from the best you could judge, after making a careful investigation and examination of those bad conditions in the North Georgia forests, any resulted from sulphur fumes during the last two years?

A. I do not think it did.

Q. 201. Were you ever able to detect anything that indicated that they had resulted from sulphur fumes in the last two years?

A. I stated on direct examination, that I found some evidence of smoke injury on that trip of June 8th, I believe it was, on oak

leaves not far from Epworth, and that is the only manifestation of smoke injury on a forest tree that I recall to have seen.

Q. 202. Was that just on the leaves only?

A. On several trees and also on some other oak trees, probably spanish oak.

Q. 203. You stated on one ocasion that the smoke was so thick it interfered with the taking of a picture, where was that?

A. At Quinn's orchard.

Q. 204. How near the Tennessee Company and the Ducktown Company?

A. About half way between I think, it is southeast from Isabella, 1¾ miles and 1¼ miles northwest of Copperhill.

Q. 205. From what direction did that smoke come, or did you pay attention to it?

A. I did not notice.

Q. 206. How long did it last?

1413 A. Well, we left, I could not say positively, it seems to me that we must have left Ducktown,—it must have been perhaps an hour.

Q. 207. That was not in Georgia?

A. Not in Georgia.

Q. 208. And I believe you state in October, wasn't it?

A. Yes.

Q. 209. Now, you were asked about the appearance of Sulphur dioxide as it came from the top of the furnace of Isabella, that is the Ducktown Company's furnace, do you know whether or not that is sulphur dioxide coming from the top of the furnaces?

A. I have reason to believe that it was, yes, sir.

Q. 210. What are the reasons?

A. Well, in the first place, in the neighborhood of the furnace I can smell the gas, and as a general fact, I know that some escapes from the smelters, and my understanding of the matter as a chemist, explains it, is that what enables us to see the gas escaping from the furnace is that the sulphur dioxide combines with the moisture of the air and makes small globules.

Q. 211. Is there any smoke coming out with it?

A. That is the smoke I have reference to.

Q. 212. I am asking about the smoke emitted in the consumption of the other ingredients of the ore, and in the fuel used?

A. I am not sufficiently familiar with that question to answer.

Q. 213. How close did you have to be to the furnace in order to smell the sulphur dioxide?

A. I remember to have smelled it on passing along the road, it must be probably 250 yards, and along the road of course, I am not certain as to the distances there, I think I have smelled

1414 it certainly as far as a half mile away.

Q. 214. From the Isabella furnace?

A. Yes, sir.

Q. 215. How close to the furnace does vegetation grow, that is apparently uninjured?

A. Well that I have spoken of on Capt. Knolde's permises, there

is Bermuda grass growing in his yard less than 3-16ths of a mile away.

Q. 216. Is that very resisting to the fumes?

A. Yes, very resisting. There is also a kudzu vine on his porch, which is susceptible to injury, and which is practically uninjured as is shown in the photograph.

Q. 217. Is there or not vegetation right near the furnace?

A. That is the nearest I recall having seen.

Q. 218. Now, professor, you spent some weeks, altogether down in that section, did you?

A. Yes.

Q. 219. You have been all through Ducktown, in that vicinity, around those furnaces?

A. I have around the Ducktown Copper Company's furnace.

Q. 220. You have also been throughout that immediate section of Georgia, which is immediately south of the line there?

A. I have.

Q. 221. You have observed the Tennessee Company and operations of the Tennessee Company, and also of the Isabella Company to some extent?

A. Well, I do not know exactly what you mean by operations?

Q. 222. You have not gone through the plants to see how they operated?

A. I have not.

1415 Q. 223. But you have stood at a distance and noted the smoke coming from the stacks?

A. Yes.

Q. 224. And noticed the h-ights of the stacks?

A. I have.

Q. 225. And the height of the location of each furnace?

A. I have.

Q. 226. And observed their location with reference to the Georgia line, have you?

A. I have.

Q. 227. And also the locations with reference to the chains of hills in the vicinity there?

A. I have.

Q. 228. I wish you would state, professor, whether or not it is your judgment that such sulphur fumes as are emitted from the Ducktown Company's plant can do any damage to vegetation or forests in the State of Georgia?

A. I do not believe, that is as evidences there last season and this, from what I saw, I do not believe from a study of the situation, I do not believe that the Company is at present doing any damage in the State of Georgia.

M. DRAKE: We except to that as a conclusion and *is* an answer to the issue involved in this cause.

Exception overruled and appeal taken.

Q. 229. Under similar conditions could any damage result to the forests and other vegetation in the State of Georgia?

A. Under any did you ask?
Q. 230. Yes, under the same conditions?
A. I believe not.

Mr. DRAKE: I except to that as a conclusion and as an answer to the issue involved in this cause.

1416 Exception overruled and appeal taken.

Mr. HILL: In your exhibit No. 27, I will get you to state what stack is represented?

A. That according to my information is some machinery run in connection with one of the mines. I think they call it the hoist. I have never visited the mine there, but that is my impression, that is not the smelter at all, I am certain.

Further deponent sayeth not.

S. M. BAIN.

Sworn to before me this 22nd day of June, —.

C. A. HILL,
Deputy Clerk U. S. Dist. Court.

1417 In the Supreme Court of the United States.

No. 1, Original.

THE STATE OF GEORGIA
v.
TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED.

It appearing that some mistakes were made by the stenographer in taking and transcribing the evidence of S. M. Bain, witness for the defendant Ducktown Sulphur, Copper & Iron Company, Limited, is it therefore agreed that the foregoing is a true and correct copy of the testimony of said witness, and that it may be substituted for the deposition of said Bain now on file in the office of the Clerk of the Supreme Court of the United States, and shall be printed instead of the testimony of said witness as originally filed.

(Sd.) WARREN GRICE,
Attorney General of the State of Georgia.
(Sd.) J. A. FOWLER,
Attorney for Defendant Ducktown Sulphur, Copper & Iron Company, Limited.

1418 Supreme Court U. S., October Term, 1914.

Term No. 1, Original.

THE STATE OF GEORGIA, Complainant,
vs.
THE TENNESSEE COPPER COMPANY et al.

Corrected testimony of S. M. Bain and stipulation that same be substituted for testimony originally filed.
Filed December 17, 1914.

1419 In the Supreme Court of the United States.

Original. No. 1.

STATE OF GEORGIA, by Its Attorney General, JOHN C. HART,
vs.
TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LTD.

The Taking of depositions in this cause was resumed at the office of Honorable J. A. Fowler, Empire Building, Knoxville, Tennessee, on this June 26, 1914, at 10:30 a. m., in the presence of counsel for both sides.

Continuation of direct examination of SHERMAN REESE:

Examined by Mr. W. B. MILLER:

Q. Mr. Reese, have you present any map or maps that you know to be substantially correct, showing the location of the plants of the Ducktown Copper Company and the Tennessee Copper Company and the contiguity of the Georgia territory by counties and sections; if you have, produce them, please.

A. Yes sir, I have a map of the State of Georgia, together with Polk County, Tennessee.

Q. I understand that both these plants in the Ducktown Basin that is, the Tennessee and the Ducktown companies' plants, are in Polk County, Tennessee, in the southeast corner of Polk County?

A. Yes sir.

Q. I will get you to produce and file as Exhibit A to your testimony the map to which you refer as showing Polk County and the contiguity of Maury, Fannin, Union and Gilmer Counties, Georgia?

A. I do so.

Exhibit A.

1420 Q. There is a legend on this Exhibit A indicating that the lands in Georgia colored in yellow are the property of J. P.

Vestal, and those colored in red or brown are the property of J. H. Vestal; is that correct?

A. Yes sir.

Q. Are you entirely familiar with the location of those lands, and have you been over them repeatedly?

A. Yes sir.

Q. This map, as I understand, was made for use in the trial of these Vestal cases in the United States District Court at Chattanooga.

A. Yes sir.

Mr. DRAKE: I except to the above question as irrelevant and immaterial.

Q. I understand those two Vestal cases were tried together?

A. Yes sir; they were jointly tried—tried together, jointly, last fall, in the Federal Court at Chattanooga.

Q. And was there or not a final determination of the cases in the United States Court at Chattanooga this last spring?

A. Yes sir.

Mr. DRAKE: I except to the above because it is irrelevant, immaterial and impertinent. If, for any reason, it could be competent, a record in that case would be the best evidence.

Mr. MILLER: Notice is hereby given that a certified copy of the final judgment in that litigation is on file in this suit, having been filed some months ago as an exhibit to the affidavit of W. B. Miller.

Mr. DRAKE: I except to the introduction of any judgment or decree in the Vestal case in the District Court of the United States, because the same is immaterial, irrelevant and impertinent to the issue in this case.

1421 Q. During the conduct of the Vestal litigation, and for some several months before the same was finally determined, were you frequently over the properties claimed by J. P. and J. H. Vestal as shown on this map?

A. Yes sir. I had the properties surveyed out by a surveyor which took forty odd days to survey out, and I visited him every week.

Q. Were you not frequently over the properties that lay between these lands claimed by the Vestals, and the plants of the Tennessee Copper Company and also of the Ducktown Company?

A. I was.

Q. State whether you were over the territory of Fannin County, lying southward, southeastwardly, and southwestwardly from the plant of the Tennessee Copper Company for a radius of eight to twelve miles?

A. I was.

Q. I present you with another map of Fannin, Maury and Gilmer Counties, Georgia, which I will ask you to file as Exhibit B to your testimony.

A. I do so.

Exhibit B.

Q. The map Exhibit B discloses that there are white lines or tracings radiating from a point on Lot 186 in Fannin County, in various directions. I will get you to state, if you know, what those white lines represent, radiating from that point.

A. They represent each day's inspection of the inspecting party inspecting the lands of J. P. and J. H. Vestal.

Q. Whose lands are colored black on this Exhibit B?

A. J. H. Vestal's.

Q. And those in yellow, I understand, represent lands owned or claimed by the Tasker interests or Tasker Lumber Company?

A. Yes sir.

Mr. DRAKE: I except to the above because the witness had not stated that the lands belonged to them and the answer was
1422 suggested by Mr. Miller's question.

A. (Cont'd.) It does belong to the Tasker Lumber Company.

Q. You see the legend on this map?

A. Yes sir.

Q. It has been partially torn off?

A. Yes sir.

Q. Is that legend correct?

A. Yes sir.

Q. Is there a man named J. M. Brooks who lived down there and owns the lands colored in yellow, or partly in yellow?

A. Yes sir.

Q. Now, how many days, probably, were you out with the inspecting parties that rode through those lands as shown on this map?

A. Well, I have been over those lands, the Vestal lands; the first year was 1910, and 1911, 1912 and 1913.

Q. Probably how many days altogether were you on it?

A. About a month and a half altogether.

Q. Were the witnesses Hughes, Parks, J. A. Miller and others, who have previously testified herein as forming members of an inspecting party that were over these lands of this territory, were those men all members of some one of your inspecting parties from time to time?

A. Yes sir.

Q. Were you with various parties that were out over these lands?

A. Yes sir.

Q. When out inspecting these lands, both as shown by these white lines on this map and otherwise, I will get you to state if you took observations of other lands as well as those shown on the map?

A. Yes sir, we taken observations of the whole country, as well as the Vestal lands.

1423 Q. What occasions have you had to visit the Southern and Southeastern territory as respects Copperhill, aside from the times when you were down looking over the Vestal lands?

A. I have had different occasions to visit that country, and have been through that country at different times.

Q. In recent years?

A. Yes sir.

Q. What is the condition of the territory southwardly and southeastwardly from Polk County, the same distance away as compared with the territory to the southwest?

A. Well, there has been some smoke damage south and southeast, more than there is southwest from Copperhill, further away.

Q. Probably how far does that zone of damage extend southwardly and southeastwardly from Copperhill?

A. Well, southeast, it would extend, I would think, some four miles.

Q. And southwardly?

A. Five miles, not so far south.

Q. About four or four and one-half or five miles to the southeast?

A. Yes sir.

Q. And southwardly from Copperhill what?

A. It would be about a mile or so less.

Q. What section, if you know, did this man Vestal live on, that is, the principal plaintiff in one of those Vestal cases—what lot of land?

A. He lived on Lot 77. No, I guess he lived on 75. I will answer that, 75 anyway; I think that is right.

Q. Whether it is 75 or 77, it lies south of the Tennessee Copper Company's works?

A. Yes sir, it lies south of the Tennessee Copper Company's works.

Q. What distance away does he live from the Tennessee
1424 Company's plant?

A. About two and one-half miles.

Q. Is there any timber on the Vestal properties that lies in lots 76 and 77?

A. Yes sir.

Q. Was or not Mr. Vestal engaged in growing crops, and did he have orchards on those lands?

A. He had gardens and patches of corn; not considered to be forming, but he had gardens and orchards.

Q. Are you acquainted with the territory in Fannin County that is claimed by the Shippen Brothers Company?

A. Yes sir.

Q. What direction do these properties lie from Copperhill?

A. They lie south, and southwest and southeast.

Q. Have you been over those properties in recent years?

A. Yes sir.

Q. How extensively?

A. Well, quite extensively. I made a thorough inspection of all those properties in 1911.

Q. State whether or not the Shippen Lumber Company, or Shippen Brothers Lumber Company claim extensive properties in that territory?

A. They do.

Q. Were you over those properties with members of an inspection party in 1911?

A. Yes sir.

Q. Can you give us the names of some of those gentlemen who composed the inspection party and visited these Shippen lands southwardly and southeastwardly from Copperhill?

A. Yes sir. I was on different trips on this inspection. One trip I had Mr. Maughan.

Q. That is Squire Maughan who has testified in this case?

A. Yes sir. Mr. Shippen, Mr. Witt, Mr. Clayton, Mr. Higdon and Mr. Stewart.

Q. Is that the witness Stewart who has testified in this case?

1425 A. Yes sir. On another trip we had Mr. Payne, Mr. Cate, Mr. Maughan, Mr. McNabb, Mr. Parks, Mr. Woody, Mr. Dalton and Mr. Shippen.

Q. Have Dalton, Payne, Maughan and Parks all testified in this case?

A. Yes sir.

Q. Now, state whether Mr. W. H. Shippen, who claimed an interest in and was president of the Shippen Brothers Lumber Company, was present during the taking of the testimony in the case of Shippen Brothers Lumber Company vs. Ducktown Copper Company pending in the United States District Court at Chattanooga?

Mr. DRAKE: I except to the question because the answer would be immaterial and irrelevant.

A. He was not present all the time, but was part of the time.

Q. Did he testify as a witness at considerable length in that case?

A. Yes sir.

Q. I will get you to state if you heard him testify what sum of money was paid to his company by the Tennessee Copper Company for the privilege of flooding the territory down there with smoke?

Mr. DRAKE: I except to the testimony because the answer must be irrelevant, incompetent and immaterial.

A. Now, I am not sure about Mr. Will Shippen, what he said. Mr. Frank Shippen was asked the question, and he refused point-blank to answer it until an order was issued by Judge Sanford for him to answer the question. His answer was that $50,000 was paid by the Tennessee Copper Company. But Mr. W. H. Shippen, I don't know what his answer was; I don't know whether he answered the question or not.

Mr. DRAKE: I except to the above answer because it is irrelevant and immaterial.

1426 Q. Has Mr. W. H. Shippen been present during the giving of your deposition here in Knoxville, and was he present during the taking of the testimony in this cause at Chattanooga last week?

A. Yes sir.

Mr. DRAKE: I except to the above question and answer, because immaterial.

Q. Was he or not in conference with counsel representing the State of Georgia during the time these depositions were being taken?

A. He seemed to be all the time, yes sir.

Mr. DRAKE: I except to that for the reason that it is irrelevant and immaterial.

Q. By what attorney or counsellor was Mr. Shippen and his interests represented in that litigation in the United States Court?

A. Judge Gober.

Mr. DRAKE: I except to above question and answer, because irrelevant and immaterial.

Q. State whether or not Mr. Shippen and his brother Mr. Frank Shippen, the treasurer of Shippen Brothers Lumber Company, were asked as to their reasons for demanding that the plant of the Ducktown Copper Company be closed and their willingness that the Tennessee Copper Company should operate.

A. Their reasons?

Q. Yes. I ask you if they were asked—if that question was put to them?

A. It was.

Mr. DRAKE: I except to the above question and answer, because irrelevant and immaterial.

Q. State whether or not, pending the taking of proof in that case, any threat or menace, or suggestion, was put forth that if their demands were not met by the Ducktown Copper Company, that the State of Georgia would be induced to demand that an injunction issue in this present case, and if so just tell what was
1427 said, and by whom?

Mr. DRAKE: I except to the above question, because irrelevant and as a reflection on the State of Georgia, and the Attorney-General of that Commonwealth.

A. Do you mean what the counsel or Mr. Shippen said?

Q. Yes, what counsel said in his presence during the taking of that proof?

A. I don't know whether I can give the exact words that were said by Judge Gober during the taking of these depositions. It was something like this: As well as I remember, he said there never had been an injunction issued until now, and intimating he was going to ask for an injunction, as I understood it, and Mr. Miller's reply to him was, as I remember it: Very well, Judge Gober, you have threatened the Ducktown Sulphur, Copper & Iron Company with an injunction. I court the day and hour that you bring it. So go ahead with it.

Mr. DRAKE: I except to the answer as being irrelevant and side bar remarks, only made in trial of another law-suit that is in no way connected with this suit, the parties not being the same in either

instance, and the answer could in no way aid the court in arriving at the truth of the issue in this cause.

Q. It has been claimed that the plant or stack of the Ducktown Copper Company is visible from the railroad that passes through the Ducktown Basin; I will ask you to state whether or not that is true, Mr. Reese.

A. There is no place from the L. & N. Railroad that you can see the Ducktown Sulphur, Copper & Iron Company's stack from the time—at no point—I want to answer the question "at no point."

Mr. DRAKE: Read the question.

(Question read.)

A. (Cont'd.) No, it is not true. I would rather answer it that way.

1428 Mr. DRAKE: I except to the question and answer, in so far as it shows that the State of Georgia has made any such claims in this cause. I do not understand it has done so.

Q. What is the nearest railroad station to the plant of the Ducktown Copper Company?

A. Well, Ducktown Station and Copperhill are about equal, the same.

Q. How far is it from Ducktown Station, or the Station on the railroad that is called Ducktown, over to the village that is known as Ducktown, Post Office?

A. About two miles.

Q. How far is it from Ducktown Station on the railroad over to the plant of the Ducktown Copper Company at Isabella?

A. About two miles and a half—I mean three miles and a half.

Q. And how far is it from Ducktown Post Office to the plant of the Ducktown Copper Company?

A. About a mile and a half.

Q. State whether there are several stacks in the Ducktown basin and near the plants of these two companies that emit smoke, and if so name some of the stacks from which smoke is emitted, independent of and aside from the smelter stacks.

A. Do you mean where it sends out coal smoke?

A. Where it sends out any kind of smoke that discolors the atmosphere and anybody can see from a distance that that would be so on a hill down in Georgia.

A. Well, Isabella has one smoke stack from the furnaces—the Ducktown Sulphur, Copper & Iron Company. Then it has various different smoke stacks from the boilers, perhaps half a dozen, at Isabella; it also has some at the East Tennessee.

Q. The East Tennessee mine?

A. The East Tennessee mine from the boilers, and Burra Burra at the Tennessee Copper Company, they have smoke stacks.

Q. Is that an ore mine—Burra Burra; that is an ore

1429 mine?

A. London mine, that is the Tennessee Copper Company's

mine; McPherson mine, the Tennessee Copper Company's mine, and Polk County mine of the Tennessee Copper Company, and Mary mine of the Ducktown Sulphur Copper and Iron Company, all send out coal smoke from the boilers of the power plants.

Q. Does that smoke issue in clouds from the tops of the stacks, in all instances?

A. A good deal of smoke comes out from them.

Q. I mean, where is it expelled; where is it emitted; where does it go out from?

A. It goes out from the tops of the stacks.

Q. Are they sheet iron stacks?

A. Yes sir.

Q. State whether or not those various stacks, that is, the boiler stacks, emit smoke constantly?

A. Yes sir.

Q. Is that smoke just ordinary coal smoke?

A. Ordinary coal smoke, yes sir.

Q. Where are the fumes that are harmful to vegetation emitted; that is, from how many stacks at the plant of the Ducktown Copper Company?

A. One stack.

Q. Did you know that territory around the stack of the Ducktown Copper Company, and around its plant and smelter, before the acid plant was built? Were you intimately acquainted with it?

A. Yes sir.

Q. Were you there while the acid plant of the Ducktown Copper Company was being built in 1908?

A. Yes sir, I was there.

Q. Did you see the operations daily as they went forward, while the acid plant was being built?

A. Yes sir.

Q. I will present to you a number of what are termed "pro-
1430 gress photographs", that is, they are supposed to be photographs of the operations as they progressed in the building of this acid plant, and I am going to ask you to number them, commencing with exhibit 1, and I will get you to tell me in each instance what you know of these photographs. I present you first with a photograph which I file as exhibit No. 1. State what that is, if you know what that photograph represents.

Exhibit No. 1.

A. That represents part of the acid plant in construction, the present acid plant in construction.

Q. That was as it was being built, before it was put in operation?

A. Yes sir.

Q. I present you another one which I identify as Exhibit No. 2; say if it is a photograph of this plant, another view of the plant under construction.

Exhibit No. 2.

A. Yes sir; that represents part of the acid plant under construction.

Q. I show you another photograph, Exhibit No. 3, and will ask you if it shows another view of the construction work as the plant was being built.

Exhibit No. 3.

A. Yes sir, that represents part of the acid plant under construction.

Q. I show you Exhibit No. 4, and will ask you what it represents?

Exhibit No. 4.

A. This photograph represents part of the acid plant under construction.

Q. What does Exhibit No. 5 here shown you, represent?

Exhibit No. 5.

A. This photograph represents the acid plant under construction.

Q. And what are those tanks?

A. Those are wood tanks for the furnaces, the water tanks of the Ducktown Sulphur, Copper & Iron Company.

1431 Q. When were they built as respects the building of the acid plant?

A. They were built—Oh, I don't know when the company first went in operation; perhaps right at the start, at the first operation of the furnace.

Q. I show you exhibit No. 6, and ask you what it represents?

Exhibit No. —.

A. This photograph represents part of the acid plant under construction.

Q. And discloses also those water tanks?

A. Yes sir.

Q. State what Exhibit No. 7 represents?

Exhibit No. 7.

A. This photograph represents part of the acid plant under construction, also the water tanks for the furnace.

Q. What does Exhibit No. 8 represent?

Exhibit No. 8.

A. This photograph shows a part of the acid plant under construction, also water tanks and stack of the furnace—the smoke stack of the furnace.

Q. There seems to be two stacks there, one taller than the other.

A. One is the coal stack for the boilers, the power plant, the near one, the small one is from the power plant at the power house.

Q. The acid plant was not in operation at the time these photographs were taken?

A. No sir.

Q. What does Exhibit No. 9 represent?

Exhibit No. 9.

A. This photograph shows the furnace and power house and acid plant and chamber buildings of the Ducktown Sulphur, Copper & Iron Company's plant.

Q. Was that before the acid plant went into operation?

A. Yes sir, during the construction of the acid plant.

Q. Now, which is the stack in that photograph from which the fumes were emitted at that time?

1432 A. The tall stack, the tallest stack in the left-hand foreground is the stack from the furnace.

Q. And what portion of the acid plant is that which appears to be completed in that photograph?

A. The chamber building.

Q. And what portion of it is that which is not completed, the skeleton or frame work?

A. That is the Glover tower building.

Q. Where are the fumes first received in the making of sulphuric acid as the plant is operated now?

A. In the Glover tower building, in the Glover towers.

Q. What is done with the product after it is received in that tower?

A. It passes from the Glover towers into the chamber buildings.

Q. That is being built?

A. That is being built on the right hand side of this photograph.

Q. How long is that chamber, the chamber building that you speak of?

A. 480 feet, is my recollection.

Q. The product, after passing through the tower building, is conducted over to the chamber portion of the structure, and then what is done with it?

A. It passes on from different chambers through this chamber building—there are two of them—and passes back into receiving tanks, acid tanks, which are now shown, directly beyond the left-hand building there in that photograph.

Q. Then the product first enters the Glover tower structure, and after that is conducted into the chamber acid plant for a distance of something over four hundred feet, traveling through various chambers, and then returns?

A. Returns to another building equally the same length, and goes into the receiving tanks.

1433 Q. And from those tanks it is drained into the railroad tanks or cars that carry it away.

A. Yes sir.

Q. I show you exhibit No. 10. I will ask you what it represents?

Exhibit No. 10.

A. This photograph shows the acid plant, also the bunkers of the furnaces and furnace stack and boiler shop of the Ducktown Sulphur, Copper & Iron Company.

Q. That is the Glover tower that is under construction?

A. Yes sir.

Q. I show you another photograph that is, as I understand a

view of the same portion of the building under construction; I will ask you to file it as Exhibit No. 11.

Exhibit No. 11.

A. I do so.

Q. Which is the smelter stack as shown in that last Exhibit No. 11.

A. The taller stack over the building lengthways of this picture, which is the boiler shop, the taller stack is the furnace stack.

Q. There appears to be some smoke escaping from various points in the left of the picture, different colored smoke; what character of smoke is that?

A. That is smoke from a locomotive standing on top of the bunkers, ore bunkers.

Q. They only escape, the fumes, there; the only stack is the small stack, as I understand it?

A. Yes sir.

Q. That was before the acid plant was put into operation?

A. Yes sir.

Q. I show you photographs which I file as Exhibits Nos. 12 and 13 respectively, and ask you what they represent; Exhibit 12 shows what?

Exhibit No. 12.

A. It shows the Glover tower building or the acid plant under construction.

1434 Q. The frame work up?

A. Yes sir, the steel frame work.

Q. That is the steel frame or the skeleton work, as I understand?

A. Yes sir.

Q. And what does No. 13 represent?

Exhibit No. 13.

A. The same building under construction.

Q. A little further advanced than in Exhibit No. 12?

A. Yes.

Q. What does No. 14 represent?

Exhibit No. 14.

A. This photograph shows the smelting plant, furnaces and acid plant of the Glover tower building in the background, of the Ducktown Sulphur, Copper & Iron Company.

Q. Which is the smelter stack as shown in that photograph?

A. The larger stack in the center of the photograph.

Q. What do the other stacks there represent?

A. Three of them represent coal stacks from the boiler power plant; the smaller one carries steam away from the slag pit.

Q. In other words, none of those stacks emit fumes that are harmful except the smelter stack?

A. Nothing but the large stack.

Q. What does Exhibit No. 15 represent?

Exhibit No. 15.

A. This photograph represents one corner of the acid plant, of the Glover tower building, also bins where nitre is stored.

Q. Of what material is this structure, the one shown on Exhibit 15?

A. Concrete.

Q. Of what material is the Glover tower, the outside, since it is completed.

A. Brick; the base is of concrete, but then the structure proper is brick.

Q. I show you Exhibit No. 16, and I will ask you what it is a view of, or what it shows?

Exhibit No. 16.

1435 A. This photograph shows the chamber buildings of the acid plant of the Ducktown Sulphur, Copper & Iron Company.

Q. Does that appear somewhat as they do not, from the same point where this photograph was taken?

A. Yes sir, that photograph must have been looking towards the north—northeast.

Q. Supposed to have been taken just about the time the chamber acid plant was completed?

A. I could not say as to that.

Q. I show you Exhibit No. 17 and ask you what it is?

Exhibit No. 17.

A. This photograph represents a view of the acid plant and smoke stack of the furnace of the Ducktown Sulphur, Copper & Iron Company.

Q. There are more stacks than one in this picture; what do they all represent?

A. The one in the center on the right represents the smoke stack of the furnace; the two on the left hand side of the picture represent the coal stacks from the power plant.

Q. By the smoke stack from the furnace, do you mean the smelter stack?

A. Yes sir.

Q. What is the relative or comparative size of the furnaces of the Tennessee Copper Company, as compared with the furnace or furnaces of the Ducktown Company?

A. I could not answer that question accurately, but the Tennessee Copper Company are a great deal larger than those of the Ducktown Sulphur, Copper & Iron Company.

Mr. DRAKE: We except to that, as a conclusion of the witness, without facts upon which it is based.

Q. Have you seen the furnaces of the two companies—have you seen them both?

A. Yes sir.

Q. How many times larger would you say are the furnaces of the

Tennessee Copper Company than the furnaces or furnaces of the Ducktown Company?

1436 A. Three or four times.

Mr. DRAKE: We except to that as a conclusion.

Q. State whether you, when you are at home, have frequent occasion to see the stack of the Tennessee Copper Company?

A. I do, every day when I am at home.

Q. State whether there is ever a time when its plant is being operated that fumes are not being sent out in volumes from the top of that stack?

A. No sir.

Mr. DRAKE: We except to that as being immaterial and irrelevant.

Q. Where were you on Thursday next after the 8th of June, 1914, and what opportunity if any did you have for observing the operations of the Tennessee Copper Company at that time?

A. I went from Ducktown to Copperhill and went over in the edge of Georgia to Fighting Town Creek and about one mile into Georgia, and turned back to Copperhill and from there back to Ducktown, and then returned to Copperhill from Ducktown that night and stayed in Copperhill that night.

Q. How many furnaces was the Tennessee Copper Company operating on that day, Thursday, and that night?

A. My best judgment is they were operating at least four; possibly five.

Mr. DRAKE: We except to the above as being uncertain, indefinite, and a conclusion.

Q. On what fact or facts do you base that judgment; what appearances?

A. Well, you could see the stacks from each furnace and see the smoke coming out, and tell there was a blast on the furnace by the pressure of the smoke, out of four stacks; then there was a large opening in the roof of the building which I would say approximately is perhaps thirty feet square, a great volume of smoke was escaping through this, I don't know what that meant, whether it meant the furnaces, or whether—I take it it represents the

1437 furnace, but I don't know it really was the furnace; I couldn't say; I take it they were running not less than four and perhaps five.

Mr. DRAKE: We except to the above as a conclusion, upon the ground that the witness has not stated facts sufficient upon which to base the conclusion, he not having qualified as an expert who could calculate from the draft of the furnace, or the amount of smoke from the furnace stack, the number of furnaces being run.

Q. State whether the fumes from the various furnaces of the Tennessee Copper Company are conducted into a tall stack?

A. Yes sir, I suppose they are. I don't really know a great deal about the construction of the furnaces; I think they are, though.

Q. What is the apparent connection; how are they conducted?

A. Well, the apparent connection is that all the smoke is carried into the large flue and into the tall center plant.

Q. Carried into there by means of what?

A. From the flues.

Q. They carry it from the various furnaces into the tall stack?

A. Yes sir.

Q. Some mention has been made by some of the witnesses of a cintering plant being operated by the Tennessee Company about this same time. Do you know where that cintering plant is located with respect to the stack, or what connection there is from one to the other?

A. No sir, I don't know. I never saw the cinter plant. I have an idea what it is, but I don't know what it is.

Q. Well, I will get you to state the volume or extent of the smoke that was being emitted by the Tennessee Company's plant and stack on Thursday next after the 8th of June, at the time you think there were four or five furnaces in operation.

A. Well, there was a great volume of smoke coming out of the stack, and also escaping from the smaller stacks in the fur-
1438 nace, just about the same that they were on the 8th. On the 8th I was also there a day, and there seemed to be about the same amount of smoke escaping as there was on the 8th.

Q. State what effect the operations seemed to have; I want you to state especially as to the smoke that was generated, and where it was deposited; what became of it?

A. Which, on the 8th?

Q. Yes, the 8th and the 11th, the intervening time, if you know.

A. Well, I don't know all about it, all the intervening time. On the 8th it seemed that the volume of smoke was turned in a northerly direction that morning.

Q. What effect did that have on the Ducktown basin?

A. It filled up the basin.

Q. With what?

A. With smoke.

Q. Could you see the smoke?

A. Yes.

Q. See it drifting away from that stack and settling in the Basin?

A. Yes sir.

Q. On the 11th what about it?

A. I was going to finish up on the evening of the 8th; the air currents were carried in a due south direction into Georgia.

Q. The fumes from this Tennessee Copper Company's plant were carried then to what extent?

A. I don't know how far they went, but the great volume of it went, it looked like to me, for miles that evening.

Q. What direction?

A. Nearly a south course.

Q. Into the State of Georgia?

A. Yes sir.

Q. What about it on the 11th?

A. On the 11th it was also going in a southeast course.

1439 Q. In considerable quantity?

A. There didn't seem to be as much in the evening as there was on the 8th.

Q. (Examination continued by Mr. J. A. FOWLER:) Mr. Reese, were you along with Professor Bain on any of his trips when he took pictures of and took blocks from trees?

A. Most of them, I suppose.

Q. Do you know of Professor Bain taking pictures when you were not present?

A. No sir, I have been with him every trip.

Q. You were with him when he took those pictures through north Georgia?

A. Yes sir.

Q. You were also with him when he took the pictures in Ducktown?

A. Yes sir.

Q. Were you present when Professor Bain gave his testimony?

A. Yes sir.

Q. Did you see the pictures when they were introduced as evidence?

A. Most every one, yes sir.

Q. Did you recognize the pictures?

A. Yes sir.

Q. From whom did Professor Bain get information as to the particular spots where those pictures were taken?

A. I gave it to him.

Q. Are you familiar with that locality?

A. I am.

Q. Do you know the various people who live in that vicinity?

A. Yes sir.

1440 Q. Did you tell him whose homes you were near when the pictures were taken?

A. I did.

Q. State whether or not you told him the exact truth with reference to that?

A. I did.

Q. Did you hear the Professor's testimony as to the locations of the various people where those pictures were taken?

A. Most all of them. I possibly did not hear every bit of it, but I heard most all of it.

Q. State whether or not the Professor's testimony with reference to those localities and the objects represented by the pictures was correct?

A. That is true, yes sir.

Q. Were you present when he blocked a number of the trees?

A. Yes sir.

Q. Were you also present when he made a number of borings in trees?

A. Yes sir.

Q. Did you hear his testimony with reference to the location of those various trees?

A. Yes sir.

Q. Was that correct?

A. It was.

Q. Did you give him the information as to the locality where those trees were standing?

A. I did.

Q. Through what section of country did you and Professor Bain pass?

A. We traveled over North Georgia, and Polk County, Tennessee, and some parts of western North Carolina—Cherokee County.

Q. Now state whether in taking those pictures it was your purpose to give a fair representation of the conditions in North Georgia?

1441 A. It was.

Q. Did you specify the most favorable places to take pictures from?

A. No sir; I only stated the place, where we were at, to Professor Bain, and he sought his own place himself; I didn't have anything to do with dictating the place or the object of the picture.

Q. State whether or not the Professor sought the most exposed or the least exposed place?

A. He taken the most exposed for smoke damage in most of the cases.

Mr. DRAKE: I except to that as a conclusion.

Q. Were or not the places pictures of which he took, among the most exposed places there were of smoke from the furnaces?

A. Yes sir.

Q. How was it with reference to the trees from which he took blocks, and those in which he made borings?

A. It was the same thing with the tree samples that he taken; he seemed to try to take them from the most exposed to the smoke, or to the furnaces.

Mr. DRAKE: We except to that as a conclusion of the witness.

Q. (Cont'd by Mr. W. B. MILLER:) I will ask you whether or not in taking those photographs by Professor Bain that were taken near the Georgia line, you know whether those were taken by him, those views, pursuant to request of the Ducktown Company's counsel that the photographic views be taken close in and where the territory was exposed.

A. That is my understanding, yes sir.

Mr. DRAKE: I except to that as leading, and as a conclusion, and as a supposition.

Q. Was that the theory on which the views were obtained, namely, that they were to be taken close in?

A. Yes sir.

1442 Q. Now suppose that you and Professor Bain had gone out a mile or two further; what if any difference would there have been in conditions?

A. They would have been as green as it would be here in Knoxville, or anywhere else far away from Ducktown.

Q. Were you with Mr. W. M. Bowron, who has testified in this case, when he made some observations with a chemical apparatus with a view to determine the smoke zone or limit as the effective operations of the Ducktown Copper Company?

A. I was.

Q. I show you a map which I file as Exhibit C to your testimony, and will ask you what the yellow and red lines that are solid on that map indicate, and also the dotted black lines?

Exhibit C.

A. The yellow lines represent a trip that we made on April 2nd, 1913; then the red lines represent another trip that we made I think the year before that. It is not marked here, and I have not got any notes with me on that, I don't know, but I think the year before, and the black line, I don't know what it represents.

Q. At the time you and Professor Bowron traced the route shown by those red and yellow lines, did he have with him this chemical apparatus about which he testified in chief?

A. Yes sir.

Q. And did he or not test for smoke along the lines of that?

A. Yes sir.

Q. State whether or not the Tennessee Copper Company was closed at that time?

A. It was on April 2nd, yes sir.

Q. Now I show you a map which I file as Exhibit D, and I will ask you what it represents, or what the black solid tracings on that map represent—the pen and ink tracings.

Exhibit D.

1443 A. The large outer black line represents what is known as the Mayfield Commission in 1901, locating the smoke zone at that time.

Q. And those lines that penetrate the outer smoke zone extending from Isabella in various directions, what do they indicate—the black lines?

A. They represent the starting point and return of this Commission, in and out of the Basin, locating this Mayfield line.

Q. The line of the smoke zone?

A. The line of the smoke zone.

Q. Did you, in connection with Mr. J. A. Miller, and Mr. Parks, witness Parks, and anybody else, visit any counties of Tennessee or North Carolina during recent months, to ascertain as to the death rate of timber in zones far away from the Ducktown Basin?

A. Yes sir, I did.

Q. I will get you to state whether or not on those trips you were

in Overton, Morgan, Fentress, Roane, Cumberland, and Putnam counties, Tennessee?

A. Yes sir, and Scott; yes sir, I was in those counties.

Q. State whether there are large tracts of forests in all those counties?

A. Yes sir, there has been very large forests; the timber has been very large and good in most of those counties.

Q. What did you find as to the death rate of the timber in recent years or months in those counties?

A. Very great; the death rate was very great in all those counties.

Q. How did it compare with the death rate of timber as shown in the North Georgia section after getting out four or five miles from Copperhill?

A. A great deal worse; a great deal.

1444 Q. That is the death rate was greater in these outside counties than in North Georgia?

A. Yes sir; sometimes ten times as great.

Mr. DRAKE: I except to the question and the answer, as being irrelevant.

Q. Did you or not in recent months also visit any forest section of North Carolina, and if so, what counties?

A. I did; I visited Mitchell County and Yancy County, and McDowell, Buncombe, and I don't know the other counties betwixt Asheville and the state line; I really don't know what counties they are.

Q. Well, state whether there were large timbered tracts in all those counties?

A. There were.

Q. What did you find to be the normal death rate of timber there as compared with what it is in the North Georgia section?

A. A great deal worse than it was anywhere in North Georgia or Polk County.

Mr. DRAKE: I except to the answer as being irrelevant.

A. At the time that you were out with Mr. Bowron on these trips when he made those observations as traced on your maps, was the plant of the Ducktown Sulphur, Copper & Iron Company operating normally and usually?

A. Yes sir.

Cross-examination.

By Hon. J. A. DRAKE:

Q. Those photographs you filed as exhibits this morning, one to seventeen, when were they taken?

A. I don't know.

Q. And by whom?

A. I don't know.

Q. You did not see them made then?

A. No, sir.

1445 Mr. FOWLER: Who did take them, and when?

The WITNESS: I don't know who; I never saw them until Mr. Miller showed them to me.

Q. I will ask you if they are not on a very small scale.

A. Yes sir, they are on post cards.

Q. Do you know why the company has not offered some photographs of the plant since those acid chambers were put in operation, showing the character and appearance of that big acid smoke stack?

A. No sir.

Q. It is a fact that there is none filed as an exhibit?

A. Not that I know of.

Q. You stated on your original examination this morning that you had been on all the photographing trips with Professor Bain, I believe?

A. Yes sir.

Q. When were those different trips made?

A. Well, I don't know that I can give you the exact dates of every one of them. Do you want me to try to give them?

Q. And how many of them were there, also?

A. The first one was in September, 1913, the first trip. I guess the next one was in January, 1914; and the next one was in February, 1914, and the next one was in March, 1914.

Q. Is that all of it?

A. No sir, not yet. Wait a minute: The next one was in April, 1914; and the next one was in June, 1914.

Q. What time in September was that first trip made?

A. September 16.

Q. What time in June of this year was the last trip made?

A. I wound up June 10th; I commenced on the 5th and wound up on the tenth.

Q. Did Professor Bain take any pictures on any of his visits down there from September 1913, to June, 1914, of the plant or smoke stack?

A. Not all of it.

1446 Q. He took pictures, I believe, from your former statements in almost every direction from the Ducktown plant, did he not?

A. Yes sir.

Q. He took various pictures of the superintendent's houses, did he not?

A. He taken two of Mr. Renwick's residence, and one of Lamereaux.

Q. You took two of Mr. Renwick's, and one or two, which was it, of Mr. Lamereaux?

A. One.

Q. Did you take any other pictures of operatives or employees of the company around there?

Q. Yes, sir, I taken one of Mr. Taylor, who is mine engineer.

Q. Why didn't you take a picture of the plant and the smoke stack?

A. Well, I don't know the reason why we did not at all.

Q. A picture of that plant and smoke stack would have shown the smoke as it boiled out of the top, would it not?

A. Yes sir.

Q. And have you not got pictures of that plant showing just how it looks?

A. Well, I have not.

Q. Hasn't the company?

A. I don't know.

Q. That you have seen?

A. I don't know.

Q. You have not any such picture that you could furnish me, that I could look at, have you?

A. No sir; no sir.

Q. How far into Georgia did you and Professor Bain go on your tour of inspection and photographing?

A. Which trip?

Q. On any of them, the furthest point?

1447 A. The furthest point? Well, in September—let's see! I will give you the date; On the 17th of September, 1913, we left camp on Jack Creek and made a tour down through Maury County and Gilmer County, and wound up at Ellijay, taking pictures all along the route, and taking specimens of leaves and tree growth.

Q. Now on that trip you were southwest at all times from the Ducktown plant, were you not?

A. No, not at all times. We wound up about due south of the Ducktown plant.

Q. But when you were in Maury County, wasn't you over behind a tier of mountains from the Ducktown plant?

A. Yes.

Q. And wasn't that in a country that never has complained of much smoke damage?

A. I never heard of it.

Q. And you got the specimens on this trip then on that route?

A. We taken specimens and pictures all along the route. We made this trip for comparison with the conditions immediately around Ducktown; also in the Jack River country—to compare conditions.

Q. You took those pictures and have exhibited them, Professor Bain has, has he not, and have you not helped to identify them in this record?

A. No sir, I don't think we have put any of those pictures in this record.

Q. And the specimens, you took specimens on that trip of wood and of leaves?

A. Yes sir.

Q. And Professor Bain has filed specimens of wood and of leaves here in this record, has he not?

A. I don't remember whether he put any of those wood samples

and leaves, or pictures, either, in this record that we taken commencing on September 17th.

1448 Q. I believe you, Mr. Reese, have been retained in the room by the copper company to aid them in the conduct of the examination of witnesses, have you not?

A. Yes sir.

Q. And you have heard all the testimony?

A. I have heard part of it. I have not heard all of it, possibly.

Q. Did you hear practically all of Professor Bain's the other day?

A. Practically all of it, yes sir.

Q. You know he did file a great many exhibits?

A. Yes.

Q. And you saw them and know the points at which they were taken?

A. Yes sir.

Q. Is that trip indicated by one of those lines that you have on one of your exhibits?

A. He has a map he filed as an exhibit to his testimony, indicating with marked lines.

Q. And that shows on his map?

A. Yes, sir.

Q. Then where did your next trip take you to?

A. The next trip I took with Professor Bain?

Q. Yes sir?

A. Well, I will have to refer to my notes.

Q. Can you remember without referring to your notes?

A. I don't know whether I can or not. I think the next trip was a trip into North Georgia, Mineral Bluff, Blue Ridge, and Fannin County.

Q. Mineral Bluff is up the Tocoa River a little from Copperhill, east of it, isn't it?

A. Yes sir.

Q. And Blue Ridge is a little more south than east, I believe?

A. Yes sir.

1449 Q. Then the next trip you took carried you where?

A. The next trip: We made a trip into the Cumberland Plateau, over about ten or twelve counties in middle Tennessee.

Q. I had reference, Mr. Reese, to North Georgia.

A. Well, I was taking the next trip. The next trip into North Georgia would be—now, really, I think maybe I made a mistake a while ago—I think we made a trip perhaps in November into North Georgia, before we made this trip; I returned to Mineral Bluff and Blue Ridge, which taken in practically along the Georgia line from Tumblin Creek to about three miles east of Copperhill.

Q. Well, now, when was the trip made that you speak of that you probably made in November?

A. That is the one I speak of.

Q. At Mineral Bluff?

A. In about three miles east of Copperhill.

Q. When was that trip made?

A. That was some time, I think, in either October or November.

Q. When was the next one made?

A. That would be the one I had just outlined before; I went to Mineral Bluff and Blue Ridge; that would be in January of this year.

Q. And the next one, now, when was it and where did it carry you?

A. Do you want me to confine myself to Georgia?

Q. Yes, that is what I mean; we are talking about Georgia now, Mr. Reese.

A. Well, the next one would be in March, on Hothouse Creek, in Fannin County, in March; March 3rd, 4th, and 5th.

Q. And the next one, I believe you said was in April; where did that carry you?

1450 A. That carried us through North Carolina.

Q. You said the next one was into Georgia.

A. No sir; the next one into Georgia would be this month, June 8th.

Q. Of this month?

A. Of this month.

Q. Where did that one carry you?

A. That carried us from Copperhill to Epworth, and from Epworth to Mobile mine, No. 20 mine, and back across the Georgia *mine* to Ducktown.

Q. That was all there in three or four miles of the plants, and generally southwest from the plants, was it not?

A. South and southwest, yes, sir.

Q. Who did you talk with on these various trips over in Georgia, and who pointed out, or attempted to point out, smoke damage to you, on those trips?

A. I did not talk with many people.

Q. Do you remember of anybody you talked to?

A. Well, on that day I just now described, on June 8, I ate dinner at a house where the family's name was Patterson; I talked with them.

Q. Did they live at Epworth?

A. No, they lived about two miles southeast of Copperhill. We have two photographs in the record of that place.

Q. That was over in the neighborhood of Mr. Quintrell's place of residence, is it not?

A. Yes sir.

Q. No. 20 mine, Mobile mine?

A. Yes sir, close to No. 20 mine.

Q. You did not talk to anybody on that trip especially about smoke damage?

A. No sir, not especially, except to Patterson; I talked to him.

Q. When you were over about Mineral Bluff and Blue Ridge did you talk to anybody about smoke damage?

1451 A. Yes sir.

Q. Who?

A. Well, I made different trips, now, aside from these trips with Professor Bain; I was in Mineral Bluff and I was in Blue Ridge last week.

Q. But I am asking you now, Mr. Reese, about you and Professor Bain, when you were on those trips, any one of them, tell me who showed you any smoke damage over there, or who did you ask for any smoke damage?

A. I was not especially hunting people for smoke damage; I thought I knew that without asking anybody.

Q. How long was it that you said you had been working for the company?

A. Twenty-one years.

Q. You are thoroughly familiar with damage when you see it?

A. I think I am.

Q. And so you did not ask for that kind of information?

A. No sir.

Q. You speak about coming to the Cumberland Plateau with Professor Bain. When was that trip made?

A. That trip—we made two trips to the Cumberland plateau; one of them was February 21st and 23rd, and another one was March 12th to the 16th. Now, that covered the Cumberland Plateau trip.

Q. Well, now, were you there at another time with that big crowd or commission that they sent out over there, or was Professor Bain with them?

A. I was with the crowd that went. Professor Bain was with me on two trips to the Cumberland Plateau.

Q. Was there anybody else with you and Professor Bain on the Cumberland Plateau trip?

A. Yes sir; one trip I had J. C. Parks, M. T. Foutts, R. A. Shiflett, J. A. Miller, and Professor Bain.

Q. Parks and Miller have both testified in the case, I be-
1452 lieve, and Professor Bain.

A. Yes, sir, and Foutts.

Q. I though- you said this morning Foutts had not testified in this case.

A. No sir.

Q. Well, you went to how many counties in the Cumberland Plateau?

A. Really, I don't know. I have left part of my record at home, and I will have to give them off hand.

Q. Can't you recollect, independent of your notes, about the counties?

A. Well, I might not give them all; I might leave out some; I can give a part. We went to Anderson, Scott, Morgan, Roane, Fentress, Overton and Putnam.

Q. And Cumberland?

A. And Cumberland.

Q. Why did you all go away over 150 or 200 miles from these plants?

A. To make a comparison of the conditions as they existed in North Georgia and Tennessee.

Q. Had you not heard and did you not know that the reason you all went over there, that these forests in the Cumberland Plateau that you visited were abnormal on account of some local trouble?

A. We did not stop at the Cumberland Plateau, even. Then I went to Johnson City,——

Q. Answer my question first, Mr. Reese.

A. I had heard that, yes sir.

Q. You know what was the matter with those forests over there?

A. No sir, I do not know.

Q. Do you know what is the matter with the forests in North Georgia?

A. Well, I believe I do. I believe the biggest thing the matter with that is fire scald, and where there has been sawmill-
1453 ing—well, I want to answer that way.

Q. Then it isn't the same trouble with that section that it is over in the Cumberland Plateau?

A. Well, I do not know, no sir.

Q. You just said you did know the trouble in North Georgia, and now you say you don't know over yonder.

A. I said I did know, in part. I would rather answer it that way; that the biggest trouble I think in North Georgia, and also in Tennessee, that is, that part of Tennessee, is where there has been sawmilling operations, fire and worms.

Q. And worms?

A. Yes sir.

Q. Don't you know, when you speak about saw mills, you attribute that to worms,—that damage?

A. Yes sir, and fire.

Q. You were in Georgia, I believe, especially investigating lands of the Vestals and the Shippens, were you not?

A. Yes sir.

Q. The Vestal lands, I believe, had been cut over a great deal, had they not?

A. Yes sir.

Q. And sawmills set up on them?

A. Yes sir.

Q. I will ask you if that same kind of conditions prevailed up on Mr. Shippen's land?

A. In part, yes sir.

Q. I will ask you if you don't know that the biggest part of that timber is virgin, and has not been touched?

A. Of Shippen's?

Q. Yes sir.

A. Well, I could not say as to its being the biggest part, but a great deal of Mr. Shippen's land has been cut over, and a great deal has not been cut over.

Q. Will you tell me a single lot there is a sawmill on, or the number of a lot on Mr. Shippen's land where there is a
1454 sawmill set?

A. You named the Flat Creek country in your examina-

tion; I don't know, I could not say that Shippen's directly, has been cut over in that section, but if it had not been, the lots adjacent or nearby had been cut over.

Q. Well, can you name a single lot number up there where there is a sawmill set on his lands?

A. I have not got those notes with me.

Q. You are very familiar with the country, are you not, independent of your notes?

A. Well, no.

Q. And you cannot recollect, in your travels through there, of seeing sawmills sets on his land?

A. Yes, I saw a good many sawmills sets.

Q. You cannot identify any of those places any more than you have?

A. Not according to the lot numbers.

Q. Is it not a theory of the company, and you are looking after that especially, that feature of it, is it not your theory that the worms in North Georgia have done the biggest part of the damage?

A. It is not the theory of the company at all, unless it is true; it is not my theory unless it is true, but if I think it is true, I say so.

Q. Can't you answer my question more directly than that?

A. I don't know what you want. Ask your question again, and if I can change it I will do so in harmony with the way I see it.

Q. (Question second above read.)

A. I have answered it like I want to.

Q. Is the smoke damage—is it smoke damage or some other kind of damage down there?

A. Well, in that particular part of North Georgia, I think it is fire and worms.

Q. Is it not the theory of the company, and is it not also your theory and belief, that those smoke fumes drive out bugs and
1455 worms and insect life of most all kinds, and is beneficial to vegetation?

A. No sir.

Mr. MILLER: On behalf of the Ducktown Copper Company, I respectfully insist it is not the province of this witness to state its theory, and he has not attempted to do so.

Q. You are the trusted employee, are you not, Mr. Reese, to look after all this class of investigation and getting up of proof for this law-suit in regard to this class of evidence?

A. I do it in part, yes.

Q. And how long have you been doing this class of work for it?

A. Well, for the last twelve or fifteen years.

Q. How many times have you testified for them?

A. I don't know.

Q. In various law-suits?

A. In various law-suits, yes sir.

Q. And don't you know if the company has a theory on this

subject, that it would be based largely on the evidence that you furnished them?

A. I don't know whether they have a theory, only on facts that is all I know.

Q. And haven't the company been asking questions by your special advice and direction, tending to prove that peaches and other fruits in that section were free from insect troubles of all kinds on account of this smoke trouble, and it therefore was beneficial to it?

A. They do seem to be. I saw a peach raised in Ducktown last year that weighed fourteen ounces.

Q. I insist that is not an answer to the question.

A. I don't know what you want. I will try to answer it as you ask it.

1456 Q. (Question second above read.) Now, you say the company's theories are based on facts, do you not Mr. Reese?

A. Yes sir.

Q. And don't you furnish them the facts?

A. I try to.

Q. That is your special business?

A. Yes sir, I try to tell the truth all the time.

Q. Getting down now Mr. Reese, to those trips that you conducted, and special committee for the company down there into North Georgia, how many times did you go on such a mission as that?

A. I can't tell you how many times; I have been on so many I don't know. I could not give you the exact number.

Q. Well, when did you first commence making such trips, and when did you quit making them?

A. Well, I have been traveling through Georgia for the last eighteen years, but not especially on smoke damage business.

Q. Well, now, do you remember when you first commenced on smoke damage business?

A. Well, if you will designate any special case, I could get it better.

Q. I am speaking generally now; I want to get it generally, first; when did you comence and when did you quit?

A. Well, I commenced especially in 1910 on the Vestal case—the Shippen's case, and also 1911, 1912 and 1913.

Q. These commissions, as I understand you, were sent out specially on account of a law-suit that Vestal had against the company, and also one that Shippen had against the company.

A. Yes sir.

Q. And on those trips you went to get evidence to try to defeat the law-suits that these men had brought against the company?

A. Yes sir.

1457 Q. In the courts of Tennessee?

A. Yes sir.

Q. On the trips over south and west from Ducktown in the Vestal's property and the Jack river country, who did you see and talk with over there of the citizens of Georgia and ask them to find or point out smoke damaged trees?

A. Well, I never made it a practice to ask any man to point it

out to me, from the fact that I could see it if it was there, myself. However, I talked with numerous citizens of that community and country.

Q. Who was one of them?

A. Well, let me see! I talked with James Ritchie, who is a citizen of that country.

Q. Where does he live?

A. He lives at the foot of Blue Ridge on the waters of Fighting Town Creek.

Q. Who else?

A. I talked with a Jones who lived there.

Q. Where did they live?

A. They lived in that neighborhood.

Q. Who else?

A. Well, I don't know; I talked to lots of them, because I bought supplies from the people there, and they were in the camp, and I talked with them at different times while I was there.

Q. Did you talk with some boys over on Jack River by the name of Harkins?

A. They were in the camp; possibly I talked to some of them.

Q. Tom and George; is that their given names?

A. I think so.

Q. Did you talk to anybody else around the mountain?

A. I don't know. I might have talked to others, yes.

Q. Did you talk to Johnson, or did he point out any smoke damage to you?

1458 A. No sir, I never talked with him.

A. You never talked with him?

A. No sir.

Q. Did those boys down there I have just mentioned point out any smoke damage to you, or attempt to?

A. They undertook to, yes sir.

Q. They said they were damaged, did they?

A. They claimed that they were smoke damaged, and I claimed that they were not smoke damaged. They looked like they were frosted, and they admitted themselves that they had a frost on the 10th and 11th of June, last year; I am confident that it what it was.

Q. When were you all over there?

A. I was over there every week from in May until in July. I had a crew of surveyors there surveying out the Vestal property which taken forty-odd days; I don't remember exactly the number of days, but forty days to survey it out.

Q. We were speaking of this trip when the camp outfit was over there.

A. The camp outfit came along in September.

Q. That was when Miller was there, was it not?

A. That was when Miller was there.

Q. When those other fellows that have testified were there?

A. Yes sir.

Q. And that was, as you have said from your notes, about the 17th of September, was it not?

A. It comenced on the 6th of September, and ended on the 27th.

Q. Frost had already fallen at that time?

A. There came a frost on the 20th and 21st of September.

Q. These hills and mountains in there, the latitude is pretty high, isn't it?

A. Yes sir.

Q. And frost appears earlier than it does down in the central basin, the low lands?

1459 A. They had a frost there, I was there myself, on the 10th and 11th of June; then they had a frost in that country on the 20th and 21st of September.

Q. What is the difference between smoke damage and frost damage?

A. Well, to a casual observer, very little difference. They are pretty much alike.

Q. A man then has to be a right smart of an expert, or quite familiar with it to tell the difference, hasn't he?

A. Yes sir.

Q. And a man who had lived away over at Athens, Tennessee, or somewhere else, that didn't see smoke damage once in seven or eight years, would not be able to tell the difference, would he?

A. It resembles very much; it is alike.

Q. What are the best months to observe that damage on trees?

A. Which do you mean, smoke damage?

Q. Yes, smoke damage?

A. Well, I don't know that there would be any difference in the days, for any month in the growing season, it could be observed if it was there.

Q. Would not July and August, when the leaves are in full leaf in those mountain countries, be a better time to see the effects of smoke for the casual observer than middle or late September?

A. Well, no, I don't think I would want to say that. I think that if the smoke would do any damage, it would do it equally as quick in any one of the growing months as it would in those months.

Q. Don't you know, and isn't it your experience and observation that smoke damage shows it quicker, and more of it, in July and August?

A. No, I would not think so.

1460 Q. And if that is a fact, you have not observed it?

A. No.

Q. Well, the second trip I believe you made for the Vestal law-suit; when was the second one?

A. I commenced on the Vestal law-suit in June, 1910, and kept it up in 1911, 1912, and 1913.

Q. I am speaking with reference, Mr. Reese, to the time that you have testified, to the first one—I am speaking with reference to the second one, when you had a big crowd camping, looking over the Vestal ground?

A. I commenced September 26, and wound up on October 4, 1912.

Q. Did you make any other trip into North Georgia to investigate damage for the Vestal law-suit?
A. Yes sir.
Q. When was that?
A. That commenced on September 6th.
Q. When did it end?
A. It ended September 27th.
Q. Who was on that trip?
A. Stewart, Maughan, myself, Dotson, Miller, Shiflett, Witt and Clayton.
Q. Now, when was the next one, and when was it made?
A. That was the last one.
Q. That was the last one?
A. Yes, on the Vestal case.
Q. On the Vestal law-suit?
A. Yes sir.
Q. Well, when was the first trip on the Shippen law-suit?
A. Well the first trip on the Shippen law-suit commenced in May, 1911.
Q. When did it end?
A. I have not the data here; some four or five days.
Q. When did the next one commence?

A. Well, there has been so many, I have not got the data
1461 here; I made four or five trips, though; and another one was in November, 1911, I don't know how many days; I have not got those notes with me.

Q. Do you remember when the next one was on the Shippen case?
A. No sir; I have been on the Shippen case three or four different trips. I don't know how many days on each one.
Q. You stated, I believe in your original examination, that the effect of building those tall stacks up there had a tendency to relieve the local situation and to carry the fumes further, and broadened the area of damage, did it not?

Mr. MILLER: Defendant company respectfully submits that the witness did not mention tall stacks.

A. It was not in the plural—the tall stack.
Q. Don't you know, Mr. Reese, that both companies originally roasted their ores in what is known as roast heaps?
A. Yes sir.
Q. And don't you know that the local conditions were worse around the Ducktown Copper Company than they are now after they built a seventy-foot stack there?
A. Well, the Ducktown Sulphur, Copper & Iron Company has always had about the same height of smoke stack that it has got now. The Tennessee Copper Company erected a very tall stack in 1906, and what I said to Mr. Miller was that the smoke did go further after that stack was erected.
Q. But answer the question, Mr. Reese; did not the erecting of the Ducktown Copper Company's stack 70 feet high lift the

copper fumes, sulphur fumes seventy feet into the air and discharge them in one dense volume and relieve the local situation to what it had been when they had a roast heap right there in that hollow?

A. No sir.

Q. When both companies built those stacks, they did not quit roasting green ores, did they—smelting green ores; they did not quit smelting them; they just changed their method, didn't they?

1462 A. No, sir.

Q. And the only difference in turning out their sulphur fumes was that in the old open roast heaps they turned them out close to the ground in a broader area than they did after they put in smelters and turned them out through a furnace and the top of a stack?

A. Of course the open heap roasting, the smoke did come out on the ground or the top of the heap; but so far as the stack of the Ducktown Sulphur, Copper & Iron Company is concerned, the hill tops around the stack are higher than the stack itself.

Q. Does that answer my question, Mr. Reese, that the smoke comes out in one dense volume now, whereas from the roast heaps it came out on a broader level nearer the ground?

A. Of course it was nearer the ground.

Q. And have you not seen the smoke from the Ducktown Company's smelter stack come out and ascend straight up into the air almost for hundreds of feet before it would dissipate or get where you could not observe it?

A. No, sir.

Q. Have you seen it go up one hundred feet?

A. Well, I could not say that I have seen it go one hundred feet; I had no way of measuring it.

Q. Look at this picture, Mr. Reese, marked "Exhibit 9" to your deposition, and taking that big smoke stack as seventy feet high, look at the smoke issuing from that and say in your opinion whether or not that smoke is over 100 feet high.

A. Well, it looks to be about twice as high as the stack is itself, anyway.

Q. Now you were asked in your original examination if there were not a great many other smoke stacks in the Ducktown basin, and you answered there were, and undertook to name how — they were. Isn't it a fact that it is easily detected, the difference, between these sulphur fumes and ordinary coal smoke?

A. It ought to be, yes, sir; I don't know how it would

1463 be to every individual; it would be to me.

Q. I will ask you just to look at it, and see if the smoke from the sulphur stack is not of a white or hazy looking color, and the smoke here claiming to come from boilers is a black smoke?

A. Yes, sir.

Q. I don't remember, but I believe you stated on your original examination, that you smelt the smoke once over in Mineral Bluff region; did you state that, or not?

A. No, sir.

Q. Did you ever smell it when you were down there in North Georgia on these trips?

A. I smelt it that Monday we talked about so much, on the 8th.

Q. Was that all the time you ever smelt it down there?

A. That is all I ever remember smelling it.

Q. Did you ever see it any other time?

A. Yes, sir.

Q. Coming down in there?

A. Yes, sir.

Q. How far down had you seen it in Georgia?

A. I don't know.

Q. About how far?

A. Well, when the Basin gets full of smoke, why perhaps it would reach two or three miles into Georgia years ago; years ago—not recently.

Q. Wasn't it so bad two or three miles down in Georgia on one of the trips that you and Professor Bain made, that you could not take pictures for it?

A. No, sir.

Q. And didn't you state in your original examination that you all had to quit one morning because the smoke was so bad?

1464 A. No, sir. I might have said something like this, now; when we taken pictures of John Quinn's orchard, which is midway betwixt the two plants, it was smoky that morning, and the smoke cleared away about the time we got there—got to the place, but before we commenced taking the picture, we could not.

Q. Have you been on the hill to the west and northwest from Blue Ridge in the last sixty or thirty days?

A. No, sir.

Q. Have you been over east of Blue Ridge in the last thirty days?

A. Yes.

Q. Where abouts?

A. Mineral Bluff.

Q. Mineral Bluff is away northeast of Blue Ridge, is it not?

A. Well, it is a little northeast; it would be east.

Q. I am talking about that bad streak where the hills open up and the smoke can go through a gap there; have you been through that gap?

Mr. MILLER: Exception is taken to this question because, as I recall, there has not been any evidence of a bad streak through there.

A. There is no bad streak through there that I know of, from the fact that I have been there four or five trips this year; I enumerated them a while ago, and I don't know of any bad streak.

Q. Don't you know there is a smoke affected strip, or area, in North Georgia, leading in a south or southeast direction, and varying according to the contour of the hills and the gaps in the ridges, that is worse than any other section down that way?

A. No, sir, I do not.

Q. Do you say the smoke damage is as bad southwest from those plants as it is southeast?

1465 A. Yes, sir. I meant to say it is as bad northwest as it is southeast.

Q. But, Mr. Reese, has there any question been raised about what is going on northwest?

A. Not by you, but there is a question raised.

Q. In this law-suit?

A. Not in this law-suit, no.

Q. And don't you know that the country lying southwest from these company-s, as you just stated a while ago, is protected by a range of mountains or hills, and is not as bad as it is southeast?

A. No.

Q. Now, how far have you seen smoke damage done southeast, this year, from Copperhill?

A. Well, I have not seen any at all until this smoke of the 8th, and that reached about possibly a mile southeast of Copperhill.

Q. You have not seen any further than that; whose land was that on?

A. It is on the river there, about a mile southeast of Copperhill.

Q. About a mile?

A. Yes, sir.

Q. You never saw any five and one-half miles down that way?

A. No, sir.

Q. If you stated that this morning on your original examination, you were mistaken?

A. I never stated it.

Q. Did you see any smoke-bit Irish potatoes over at Vestal's this year?

A. No, sir.

1466 Q. You never saw any smoke-bit ones over in Mineral Bluff, either, did you?

A. No, sir.

Q. Those men that you had here testifying for the Copper company are from Mineral Bluff ?

A. Some of them.

Q. And who testified that they had smoke-bit potatoes; they didn't show them to you?

A. I never saw them.

Q. You didn't look around then much over there in the gardens around Mineral Bluff, did you, Mr. Reese?

A. Well, yes; there was nothing to be seen; everything was just as good as it could be, looked to be. There is no contention about the smoke this year at all, nothing about it; I never heard it from any witness.

Q. If there is the worst drouth this year that has been in years, and which has hurt stuff, you never saw it or heard of it?

A. I did. They had a drouth there for six or seven weeks.

Q. Please explain what you mean by saying that everything looked as fine as you ever saw it anywhere?

A. I answered that in regard to what you said about the smoke. I said there was no smoke conditions there at all. I re-say it.

Q. What is your present position or employment with the Ducktown Company?

A. I am termed, I believe, on the pay-roll, as "Overseer of the Estate".

Q. Mr. Reese, you made an affidavit in the original law-suit, did you not?

A. Which is that?

Q. In this original case in the Supreme Court of the United States?

A. No, sir.

Q. You did not make any affidavit?

1467 A. No, sir.

Q. Did you assist them in getting up affidavits in that case?

A. Well, I assisted Professor Bain in the work that he did, in getting up the data that he got up.

Q. I don't think you understand me, Mr. Reese. I mean back in 1906, when this case was originally brought by the State of Georgia to close down both of these copper companies.

A. No, sir.

Q. And proof was taken by affidavits?

A. I understand your question. No, sir.

Q. You did not make any affidavits?

A. No, sir.

Q. Did you assist the company in getting up affidavits in those cases, to that effect?

A. I don't know what I did in the case. I don't remember it. I never made any affidavit.

Q. You just stated that your employment has been the same for some fifteen years, did you not?

A. Well, practically the same; in one way it has been the same. I have been relieved of some parts of the work that I formerly did.

Q. And don't you know that you helped, went out and helped them to get witnesses in that case, and that that was part of your duties and employment at that time?

A. I might have done it; I don't remember.

Q. And don't you know that the theory of the company was, and you did undertake to prove, that the building of those tall stacks had entirely relieved the situation, and that North Georgia was receiving no damage at that time?

Mr. MILLER: This question is excepted to because the proof in the record itself is the best evidence of what was proven, and that being a matter of writing and printing, should be referred to, and it is not for the witness to draw a conclusion.

1468 Exception overruled and appeal taken.

Mr. DRAKE: I ask the question to refresh the witness's recollection as to his work in the case, and to bring to his attention the fact that he did help—obtain affidavits to prove the conditions that obtained at that time.

A. I don't remember of my working in the case, in that particular case.

Mr. MILLER: I will concede that it was the theory of the Tennessee Copper Company, and probably of the Ducktown Company that the building of the tall stack by the former would relieve the situation in the case. I understand that to be true. I do not concede that the theory was correct at all.

Q. Mr. Reese, on any of those trips of inspection when you had that big crowd and camped out, did you or anyone in your presence tell the people of North Georgia that you were down there looking at a railroad route?

A. I never heard about it at all until you introduced it in this examination.

Q. Did you tell the people what you were down there for?

A. Yes, sir; if I had occasion to, I did.

Q. Did you have occasion to?

A. Perhaps I did, yes.

Q. Well, not "perhaps," but did you, and if so, whom did you tell?

A. Well, now, I can't tell you what all I told, for I kept no record, but if I was examining Shippen's land, I was examining Shippen's land, and if I was examining Vestal's land, I was examining Vestal's land.

Q. Do you know J. W. Witherow?

A. No, sir.

Q. Did you stop with a man of that name at Mountain Town?

A. No, sir, I was not at Mountain Town. I was at Chattanooga. I organized a crowd and put them at work, but I came to

1469 Chattanooga.

Q. You said on your original examination this morning that you were over at Mr. Joe Vestal's and saw his gardens and crops. What lands was that?

A. No, I said this, Mr. Drake: That I passed through Epworth on the 8th of this month, and of course I don't know whether he has got anything else except a garden; that is all I think he has got, and I never made no minute examination of it; we passed through it.

Q. He had a garden?

A. He did have a garden?

Q. Yes.

A. I suppose all the people, or lots of them, had gardens.

Q. Didn't you say this morning that you saw Mr. Vestal's garden over in Epworth this year?

A. Well, if I said that—I do say it now.

Q. Didn't you testify to the number of the land lot that he lived on?

A. Yes, sir.

Q. What was that?

A. Seventy-five.

Q. And didn't you state that his garden——

A. Now, I wouldn't be positive about that being seventy-five. That is what I think it is.

Q. And didn't you testify that his garden was fine?

A. It was; considering the dry weather, it was fine.

Q. And his orchard, didn't you say his orchard was good?

A. Yes, sir.

Q. And his crops were good, and that everybody's gardens were good over there?

A. Good, considering the dry weather, yes, sir.

Q. How far have you seen smoke northwest from Ducktown?

A. Well, I think I have seen the signs six or seven miles.

Q. Now, Mr. Reese, that damage was closer to the Duck-
1470 town Company than it was to the Tennessee Company, was it not?

A. Well, on airline, yes.

Q. How many miles?

A. Well, it would be something like two or three, two and one-half or three miles; two miles; two miles or two and one-half.

Q. You know something about how these smokes travel through the gaps in the hills, do you not?

A. Yes, sir.

Q. Wouldn't it travel better through the gap of a hill than it would over a hill?

A. Yes, sir.

Q. And doesn't it have a tendency to follow the low gaps rather than to go straight over a hill?

A. If the air currents carry it that way it would; yes sir.

Q. If the smoke from the Ducktown Copper Company's stack should ascend in the air 175 feet, or 190 feet, and the winds were blowing from the northwest towards the southeast, whereabouts would those smokes come in contact with the Tennessee Copper Company's plant?

A. I don't think you would get a condition like that.

Q. Answer my question, if that condition should obtain?

A. Well, I could not speculate on a condition like that, from the fact that I never saw a condition like that.

Q. Don't you know that it would strike it exactly on a level beyond where the Tennessee Company's smoke comes out?

A. Well, if you could have a condition like that, possibly it would, but I don't think you would ever have a condition like that.

Q. Then that would be the effect, if such a condition as that should prevail.

A. Well, I am not going to say "Yes", when I know it is not, because I don't know it.

Q. If that smoke should strike the Tennessee Copper Com-
1471 pany's plant right where it comes out, wouldn't those smokes join and mingle and go into the northeast of Fannin County, Georgia?

A. No, if you were figuring on a condition like that, then the Tennessee Copper Company's smoke, under the circumstances that

you have described, would be going that much higher, and so they would not intermingle, if you could have a condition like that which you describe; but I have never seen a condition that you have described.

Q. I understand that you say that it is impossible for such conditions to prevail, but if they did, you say they could not mix?

A. Well, for the same reason that, if you take a condition that the Ducktown Sulphur, Copper & Iron Company's smoke would go 190 feet as you have stated, than the same condition would allow the Tennessee Copper Company's smoke to go that much higher, so they would not intermingle; you see that yourself.

Q. Do you know enough about winds and the currents of winds and airs to know that there is a difference in the lower strata, or that next to the earth, and those that travel oftentimes up above it?

A. I do.

Q. And have you not seen the clouds very high going one way, and those still lower going another?

A. Yes sir.

Q. To what would you attribute that condition?

A. You can see that demonstrated in the high stack of the Tennessee Copper Company.

Q. Answer my question.

A. I am answering it.

Q. What do they indicate, when you see clouds in one strata going one way, and clouds in a lower one going another way?

A. I want to answer it this way; I want to answer it to
1472 suit myself; I have seen the smoke going very straight from the Tennessee Copper Company's stack perhaps 100 or 200 feet high, and then break off and travel on a level.

Q. Would that indicate that the winds are blowing one way high up, and another way lower? Ain't that what those conditions indicate?

A. I don't know whether I want to put it that way or not.

Q. Well, now, let us suppose that the air is quite still down close to the earth for 175 or 180 feet, and that at about 175, 180, 190, or 200 feet the wind was blowing pretty strong; wouldn't the smoke from the Ducktown Copper Company ascent practically straight up until it struck that upper current of air, and then if the upper current was driven from the northwest towards the southeast, wouldn't it drive it right down on to and into the Tennessee Copper Company's smoke stack?

A. I saw this; I saw it——

Q. Answer my question, please, and then explain?

A. I will answer it this way; I saw it on June 8th traveling on the ground; it struck the ground immediately after it left the Ducktown Sulphur, Copper and Iron Company's smoke stacks, and it was diffused out there until it was not visible in the air at all in less than a mile and a quarter from the works.

Q. Answer the question, please, Mr. Reese.

(Question second above read.)

A. I think it would be precipitated before it reached the Tennessee Copper Company's works.

Q. Then, as I understand you, the Ducktown Copper Company's smoke would not reach as far as two and one-half or three miles?

A. I don't think it would, no.

Q. Don't you know, Mr. Reese, that you have seen the smoke come out of that stack and go up in a solid column and travel off in any direction the wind might be blowing, and go for a mile, without perceptibly breaking up at all?

1473 A. Well, yes, I think it might go as far as a mile until it would—not much over a mile, until it would be perceptible.

Q. And then have you not seen it go gradually on and on, until it would be so far that you could not see it, is the reason you could not see it further?

A. No sir.

Q. There is a great deal of dead timber in North Georgia, next to these plants, isn't there, Mr. Reese?

A. Not extraordinary; there is some dead timber.

Q. Don't you know that the reason there isn't more dead timber, is that it has all been killed and the people have cut it down and sold it for wood and burned it up; some of it went that way?

A. Yes sir.

Q. Don't you know from your own personal knowledge that it is gone?

A. Immediately in the Ducktown Basin, that is true.

Q. And don't you know that condition extends northwest about ten miles from these plants, and southeast about ten or twelve or fifteen miles?

A. No sir, you have got in wrong. The Basin east and west is about eight miles, and north and south it is about ten miles.

Q. Don't you know there is a gap in the mountain leading down into Gilmer County that carries those fumes from eighteen to twenty-five miles away?

A. I don't think it does.

Q. And have you not seen the effects visible on the foliage that far away?

A. No sir. In 1906 and 1907, I was on an inspection those years, and the worst I ever saw it, and went on fur— away; that was the year of the tall stack being put in operation

1474 by the Tennessee Copper Company; and, air-line, I don't think I saw the effects over eight or ten miles in Georgia.

Q. Where was that at?

A. That was in Fannin County.

Q. At what point in Fannin County?

A. Well, I think I have seen the effects of it on Sugar Creek, that is west of Blue Ridge.

Q. Didn't you say in your original examination in the Shippen case that you had seen the effects of that smoke twenty miles away, in Gilmer County?

A. No sir, I don't think you could find it.

Q. I will ask you if you was not asked, in the case of Shippen Brothers Company against this Ducktown Company:

"Q. Now you say you did not inspect in 1905. In 1906 where did you find it fartherest away?", and wasn't your answer,

"A. I believe the furtherest away I saw it in 1906 was in September when I was out twenty-one days and it was as far down as Greasy Creek."

A. Well, that has nothing to do with Georgia; that is down in Polk County.

Q. "Q. How far is that from the Ducktown Sulphur, Copper & Iron Company's plant? A. Twenty miles."

A. That is right.

Q. Then you have seen it twenty miles away?

A. Yes, and in 1906 it was very visible on Greasy Creek.

Q. Didn't I ask you a moment ago how far you had seen it away, and didn't you answer eight or ten miles?

A. No sir, you didn't ask me that, Mr. Drake. You asked me how far down in Georgia I had seen it.

Q. You never examined those mountains east from Ellijay and Cherry Log and Whitepath, did you?

A. Yes sir.

Q. You couldn't find any smoke down there?

1475 A. Yes, sir, a little bit in 1906 on Cherry Log.

Q. How far is that away?

A. Well, air-line, I guess it is about 15 to 18 miles.

Q. That is down in the State of Georgia, as I understand you?

A. Yes sir, that was in 1906.

Q. Did you see any smoke damage down east from Ellijay, in the Turnip Creek hills and mountains?

A. No sir.

Q. Did you look up there for any?

A. Yes sir.

Q. I will ask you, in the mountains and hill sides southeast from Whitepath, did you look for smoke damage?

A. Yes.

Q. Did you find any up there?

A. No sir, I did not think the smoke had ever damaged anything up there.

Q. I believe you said in your original examination that the effects of this smoke were worse on certain hills than on others in the same locality. Is that not a fact?

A. I did not say that, but, then, if you want to ask me the question, I will answer it.

Q. Is that it? (Question second above read.)

A. Well, please say that I did not say that.

Q. Will you state that the effects of these fumes are uniform in any certain community?

A. No sir, I don't think they are.

Q. Are they not worse on one tract of land than they are on another lying in the same neighborhood?

A. Well, it could be the case, depending altogether on the air currents.

Q. And hasn't that been your observation?

A. Well, possibly in some instances, yes.

Q. Have you not in traveling through those mountains and hills observed a patch of damage, and go on and strike other
1476 timbers joining it that were entirely unaffected from smoke?

A. Yes sir.

Q. Then, as I understand you, you attribute that to the air currents?

A. Yes sir.

Q. Being driven, as I understand you, in the one instance onto the timber at this certain point, and at the other would be driven away from it?

A. Yes sir.

Q. How did you, Mr. Reese, get your knowledge or information of how to make copper and sulphuric acid?

A. I don't think I ever stated very much about how they did make copper and sulphuric acid.

Q. I will ask you if you did not go into a detailed description of how they handled these fumes and operate that acid plant, in your original examination this morning?

A. Not very deep. I described the acid plant in a casual way.

Q. All that was just hearsay, was it not? You don't know of your own knowledge how to do that?

A. Yes, I have seen it with my own eyes.

Q. Didn't the men in charge of the plant tell you, and don't you know you could not see inside of things and tell what was in there?

A. Yes, I have seen inside of the plant.

Q. Did you ever go inside, where those fumes was going in, or did you ever put in the machinery that actually operates those things?

A. No, I never put in the machinery.

Q. You have been conducted through there like a visitor, only you have been there more times than a visitor, isn't that about all?

A. That is all.

Q. You don't know anything about the mixing of gases to get effects?

1477 A. No sir.

Q. You don't know what effect carbon gas would have on this sulphur gas, do you?

A. No sir.

Q. Nothing of the kind?

A. I am not an expert on that.

Redirect examination.

By Mr. W. B. MILLER:

Q. You know where the fumes are generated at the smelting plant?
A. Yes sir.
Q. And you know how they are conducted from there into this converter?
A. Yes sir.
Q. And then you say they are sent from that converter or Glover town into the chamber operation?
A. Yes sir.
Q. You know that they go that way?
A. Yes sir.
Q. And then the product goes some four hundred and more feet on one side and is returned on the other?
A. Yes sir.

Mr. DRAKE: We except to all these questions, as leading.

Q. Well, Mr. Reese, when asked about these men that were sent down into North Georgia to look about the timber and the selection of men that lived away from or out of the Ducktown Basin, I will get you to state whether or not a man of average intelligence can tell when a tree is dead and when it is growing?
A. He can.
Q. Have you ever heard it maintained that it required a smoke expert, or sulphuric acid expert to tell whether a tree was dead or whether it was green?
A. No sir, I never did.
1478 Q. Do you know whether or not the company in engaging these men, endeavored to get men that were entirely removed from the section, and that were timber men?
A. Yes sir.

Mr. DRAKE: We except to that as leading and as being a conclusion of the witness.

Q. You have been asked on examination in chief about the Ducktown Company erecting a tall stack, and about these companies erecting tall stacks. State what is the height of the present stack of the Ducktown Copper Company as compared with what it has been ever since the company started in 1891?
A. About the same.
Q. And has it or not always sent out through the top of that stack a percentage of sulphur in the form of sulphur fumes?
A. It has.

Mr. DRAKE: We object to the last question and answer, as being a conclusion of the witness.

Q. And whether the Ducktown Company's present stack is on the same ground or substantially the same ground and site that it has always been on?

A. It is practically the same site it has always been on.

Q. You were also asked on cross-examination as to what happened after these companies put in smelters. I will get you to state whether or not the Ducktown Company has always, since 1891, operated a smelter.

A. It has.

Q. The fact is, it could not produce the ore without operating a smelter?

A. No sir.

A. Mr. DRAKE: We object to the above, as being leading and a conclusion.

Q. Has there ever been any change in the manner of smelt-
1479 ing ores except that after they ceased to roast in the open heaps, they smelted the green ore—smelted the ore green?

A. That is all the change.

Q. Now that Greasy Creek section that you found so badly affected in 1906, I believe you stated that was in Tennessee?

A. Yes sir.

Q. State whether or not that was at the junction and along near the mouth of Greasy Creek where it empties into the Ocoee River?

A. It was.

Q. And state whether or not the smelters of the Tennessee Copper Company at that time were operating full blast right on the bank of the Ocoee River?

A. They were, in 1906, the year of the installation of the tall stack.

Q. Mr. DRAKE: We except to the question as being leading, and to the answer as being a conclusion of the witness.

Q. State whether or not the blighting effects of the fumes were traceable right back from Greasy Creek up the Ocoee River to the Tennessee Copper Company's plant?

A. It was.

Mr. DRAKE: We except to the question as being leading, and to the answer as being a conclusion.

Q. Did you trace them along there and see it for yourself?

A. Yes sir.

Q. You saw the timber there yourself?

A. Yes sir, down the river.

Q. And you were asked also as to the distance from certain Georgia points to one or the other of these plants, and you described it in your cross-examination as being from ten to eighteen miles. Now, was that from Isabella or from Copperhill, or where was it?

A. That would be from Isabella, is what we calculated from.

Q. So it would be how many miles closer to Copperhill?

1480 A. Three miles less; it would be about twelve miles from Copperhill.

Q. Now you were also asked to suppose a condition when the fumes from the Ducktown Company's plant would rise to a height

of from 175 to 190 feet, and then be concentrated on a plane, a straight line to the top of the Tennessee Company's stack, and you were asked if, under those circumstances the fumes would not intermingle. Now, I will ask you whether or not you have ever seen the fumes from one of those plants sent up to that distance and then concentrated in a straight line with full force at the top of the stack of the other one?

A. I never saw that condition.

Q. State whether or not the fumes immediately begin to diffuse after they are eliminated?

A. They do.

Mr. DRAKE: We except to the above as being a conclusion, and to the question as being leading.

(Signature waived.)

1481 STATE OF TENNESSEE,
County of Knox, ss:

I certify that I took the foregoing deposition in the words of counsel and witness, and correctly transcribed the same.

This June 26, 1914.

R. S. C. HUTCHINSON, *Reporter.*

1482 In the Supreme Court of the United States.

STATE OF GEORGIA, by Its Attorney General, JOHN C. HART,
vs.
TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LTD.

Stipulation.

It is hereby agreed by counsel for the State of Georgia that it shall be a sufficient certificate to the foregoing depositions for the stenographer to certify that he correcly took the statements of the several witnesses in shorthand and correctly transcribed the same; formal caption and certificate in all other respects, and the signatures of the witnesses being waived.

It is further stipulated that all exhibits produced by all witnesses on behalf of the Ducktown Company need not be actually filed for the present with the transcript of testimony but they are hereby treated as being regularly filed as of the date of filing the said transcript and that they may be later transmitted to the Clerk's office and filed after the taking of the entire testimony herein is completed.

J. A. DRAKE,
Counsel for Complainant.
J. A. FOWLER,
W. B. MILLER,
Counsel for Respondent.

[Endorsed:] Supreme Court U. S., October term, 1914. Term No. 1, Original. The State of Georgia, complainant, vs. The Tennessee Copper Company, et al. Evidence for the Defendant, The Ducktown Company. Filed September 14, 1914.

1483 In the United States Supreme Court at Washington, D. C.
No. 1, Original.

STATE OF GEORGIA
vs.
TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LTD.

The depositions of J. B. Kinsey, M. C. Goss, J. R. Herren, W. W. Thrasher, A. L. Chastain, W. P. Harper, T. M. Bennett, I. S. Davis, Ham Holt, J. W. Clayton, Grant Orten, T. E. Garren, J. E. Wilson, Robert Hampton, F. T. Largent, E. L. Stanley, J. M. Davis, W. E. Rogers, B. H. Holt, A. M. Johnson, Jason Aikins, W. S. Clayton, W. T. Higdon, W. T. Postell, J. E. Thompson, G. M. Bentley, J. H. Quintrell, Sherman Reese, taken on notice under order of the Supreme Court of the United State of date October 19th, 1914, on behalf of the defendant, Ducktown Sulphur, Copper and Iron Company, Ltd.

It is agreed that the Commissioner, R. S. C. Hutchinson, may transcribe the notes and transmit the same, together with the exhibits to the Clerk of the Supreme Court of the United States at Washington; and further may sign the names of the several witnesses to their depositions without said depositions being submitted to the parties; and all formalities of caption and certificates are hereby waived, except that the Commissioner shall certify that he correctly took and transcribed said depositions.

WARREN GRICE,
Attorney General of the State of Georgia.
J. A. FOWLER,
Attorney for Ducktown Sulphur, Copper and Iron Company, Ltd.

1484 In United States Supreme Court at Washington, D. C.

No. 1, Original.

STATE OF GEORGIA
vs.
TENNESSEE COPPER CO. and DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LTD.

The depositions of J. B. Kinsey, M. C. Goss, J. R. Herren, W. W. Thrasher, A. L. Chastain, W. P. Harper, T. M. Bennett, I. S. Davis, Ham Holt, J. W. Clayton, Grant Orten, T. E. Garren, J. E. Wilson, Robert Hampton, F. T. Largent, E. L. Stanley, J. M. Davis, W. E. Rogers, B. H. Holt, A. M. Johnson, Jason Aikins, W. S. Clayton, W. T. Higdon, W. T. Postell, J. E. Thompson, G. M. Bentley, J. H. Quintrell, Sherman Reese, taken on notice under order of the Supreme Court of the United States of date October 19th, 1914, on behalf of the defendant, Ducktown Sulphur, Copper and Iron Company, Ltd.

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1485 *Evidence in Rebuttal.*

First witness, J. B. KINSEY being first sworn, deposes as follows:

Examined by Mr. W. B. MILLER:

Q. What is yo-r age?
A. About forty-nine.
Q. Do you live in North Georgia?
A. Yes Sir.
Q. In or near what point?
A. I live in Epworth.
Q. That is how far from the state line—the Tennessee state line?
A. You mean the air line?
Q. Yes; about that?
A. Well, sir, I guess about two to two and one half miles air line.
Q. What business are you engaged in?
A. I follow carpentry work a good part of the time, farming generally through the summer time.
Q. I will get you to state how long you have lived in or near Epworth?

A. I have been there five years, sir.

Q. Do you raise any gardens, crops or orchards?

A. I garden altogether every summer.

Q. State the condition with respect to sulphur fumes smoke or damage therefrom in your section of country from the first to the fifth of July of this year, if there was any?

A. Well; sir. if there was any from the first to the fifth of July, I have no recollection of it.

Q. If there had been any damage of consequence, that is, any substantial damage done down there, would you have known it?

A. I think so, sir because there was a little money appro-
1486 priated for that business, and I thought I was as much entitled to it as any man, and so, necessarily, I kept the dates.

Q. You understood that the Tennessee Copper Company had up an appropriation with Georgia, under a contract, and you were looking out to see if there was any damage so you would get your part?

A. Why sure, yes sir.

Gen. DRAKE: We except to that as irrelevant, and not in rebuttal to what has already been introduced.

Q. Now, was there any damage of consequence during the entire season this year?

Gen DRAKE: We except to the question as calling for a conclusion.

A. Well, about the 8th and 9th there was a little bit of smoke came over there, and it seemed like for a little bit that it hurt everything considerable, but in the course of about ten or twelve days, I think it was about all gone out of there. Outside of that I don't think there was any damage; I never heard anything at any rate. I was gardening, and I guess I raised something between twelve and twenty-five bushels of tomatoes, and they are about the easiest vegetable killed, I guess, there is; and there — some different men went into my garden to look at the tomatoes I had, and I guess if I was going to swear positively in regard to it, my estimation would be twenty-five bushels.

Gen. DRAKE: I except to the answer as being irrelevant, and not being in rebuttal of anything that has been proven in this case.

Q. Were you acquainted with that North Georgia section before the acid plants were built at the two copper companies?

A. Yes Sir.

Q. How did the volume of damage that was done before those plants were built and installed, say from 1907 up until 1908,
1487 compare with conditions since those plants were put in operation?

A. Oh, well, there is quite a difference; quite a difference.

Gen. DRAKE: I except as not being in rebuttal.

Q. What do you mean by "quite a difference"?

A. Well, there is not as much damage done now as there was at that time.

Q. Now do you know whether in May, of 1913, say from May 1st up to May 15th or 16th, was there any damage done through that section?

A. Well, sir, I wouldn't swear on that. Sometime during the year, or during the summer, there was some smoke came down; I noticed it turn the *t*otatoe crops kind of white, but whether it was then, I wouldn't say.

Q. Was it of any consequence?

A. I don't think so.

Q. Gen. DRAKE: I except to that question as calling for a conclusion.

Q. You know when anything is damaged of consequence by smoke, don't you?

A. I think so.

Cross-examination.

By Gen. J. A. DRAKE:

Q. What is your occupation, Mr. Kinsey?

A. I farm and carpenter.

Q. I will ask you if you do not spend the most of your time working for the Ducktown Copper Company?

A. I have worked there off and on about thirteen months, sir, which is all the work I ever did for them.

Q. Are you in their employ down here?

A. No sir. Well, yes sir, they have employed me as a witness to come down here.

Q. How much do they pay you?

1488 A. There has never been any agreement. I have never had one of the company say anything to me about it.

Q. You don't know how much you are going to get?

A. No sir, I do not.

Q. I will ask you if they have not agreed to give you five dollars a day while you are down here?

A. No sir, there hasn't been any agreement made.

Q. Do you own any land in Tennessee?

A. Yes sir.

Q. How much land do you own?

A. I guess I own about thirty-five acres, sir.

Q. Whereabouts?

A. I own an acre right in town, and about three quarters of a mile of town I own thirty-four acres, more or less.

Q. Do you mean in the State of Georgia?

A. Yes sir.

Q. Is that where you live?

A. I live right in Epworth.

Q. I say the land you own, do you live on it?

A. I live on the lot in Epworth, the land that I have is outside of town.

Q. I will ask you now if the deed to that land is not in your daughter—the title?

A. Where I live it is.

Q. And that is the land you have just sworn that you own, is it not?

A. Yes sir, I own it.

Q. Don't your daughter own it, and isn't the legal title in her?

A. No sir, it is not. I say it is not, because I deeded her six acres of land in one, and the other was deeded to my wife.

Q. There is damage over in North Georgia?

A. Well, I suppose there is a little damage more or less
1489 I claim they hit my individual crops.

Q. There was some on your individual crops?

A. Very little.

Q. Didn't you put in a claim for it?

A. I put in a $10.00 claim.

Q. This year?

A. Yes sir, about the 8th or 9th of June.

Q. Of this year?

A. Yes sir.

Q. For their damage to your garden?

A. Yes sir.

Q. That is all you had in your garden?

A. Yes, sir, on the acre there.

Q. Last year did you put in any claim for damage, last year?

A. No sir, that was the only time I ever put in any claim for damage.

Q. Where is that thirty-five acre lot of land?

A. I don't remember the lot; probably Mr. Vestal recollects the lot; it is right below where Jim Chastain lives. Do you know what lot that is, Mr. Vestal?

Q. Just answer my question.

A. I don't know; I guess it is three quarters of a mile out of town. I don't recollect the lot.

Q. Well, now, you say there was no damage done last year about the 10th to the 16th of May?

A. I said I wouldn't say what time it was done; there was a little damage done on my potatoes, but I don't know whether it was that year or not, because the vines have covered the ridges all over —.

Q. You say there was some (damage) that was done last year?

A. I say very little, yes sir.

Q. There was some damage done? you say a very little;
1490 you don't know how much was done except on your own garden, and in that neighborhood?

A. I say, there was very little done.

Q. Of course, if you live by working at the carpenter's trade, you do not live by farming, do you?

A. Well, I did live, up to last year, by farming.

Q. When you talk about last May, when you say there wasn't but

little damage done, was when the Tennessee Copper Company closed down?

A. Last May a year ago *what* what I had reference to.

Q. That is what I am talking about?

A. I made a crop last year.

Q. That is last year, isn't it.

A. That is last year.

Q. And that is what you had reference to when you answered?

A. That is what I said.

Q. In your original examination. What were you doing on those days?

A. What was I doing? I was farming.

Q. What were you doing?

A. I suppose I was working on my farm.

Q. Tell me what you were doing on the 10th day of last May a year ago?

A. I am not going to tell you for I don't know.

Q. You don't know what you were doing a single day?

A. I know I was at work every day.

Q. At what time—tell me what you were doing any day, and were you working from the fifth of May to the sixteenth of May?

A. I am not going to because I can't tell you.

Q. What were you doing from the first to the fifth of July this year?

A. From the first to the fifth? On the first day of July I was at work at the Ducktown Sulphur, Copper and Iron Company,
1491 and on the second day I got off to go home and fix my well on what you claim to be my daughter's place. I was at work on my well that day, and I bought some lumber and went and got it and I stayed home then from the second until the sixth; the sixth I went back to work.

Q. The Ducktown Copper Company was running on the first?

A. Yes sir.

Q. It had started up the night before, had it not?

A. I don't recollect what time they started up, but they were running.

Q. They were running on the first, they were running on the second, third, fourth and fifth?

A. I wasn't there from the second until the sixth; I left there on the second, and went back the sixth.

Q. There was some smoke, and there was some damage; how much damage was done?

A. I said there was no damage done from the second to the sixth.

Q. At your place?

A. At no place.

Q. You live right there close to Epworth?

A. I live right in Epworth and I never saw no damage done anywhere around there.

Q. You live close to the Tennessee line, two miles and a half of it?

A. Yes sir, but it is not two miles and a half from the Ducktown Sulphur Copper and Iron Company.

Q. You don't know what was done off to the side of the mountain, six miles from there?

A. No sir, I don't know what was done on the other side.

Q. The Tennessee Copper Company was not running during that time, was it?

A. I don't know sir, anything about the Tennessee Copper Company.

1492 Q. Don't you know you pass by there, you pass by there——

A. I know I passed by there, but I know I did not ask them anything about it.

Q. You can tell me when the Tennessee Company first began to run by riding right along by it?

A. I can't tell when they were running.

Q. Don't you know it was not running?

A. I don't know whether it was running when they were running; I don't know if they had started up.

Q. You passed right by the Tennessee Copper Company when you came down to Epworth from the Ducktown Company on the second, did you not?

A. I went right through the yard; yes sir; right through the yard.

Q. And there wasn't a thing on earth to keep you from seeing it then?

A. No sir.

Q. You are in sight of it for two or three miles, are you not, before you get to it?

A. I am in sight of it when I am at home.

Q. And in coming from Ducktown, from the Ducktown company are you not in sight of the Tennessee Copper Company from the time you get on top of that little hill there above the plant?

A. Pretty nearly all the way.

Q. And you see it all the way along that road?

A. Yes sir.

Q. And if it — running, don't you know you can see the smoke boil out of the top of that big stack?

A. Yes, sometimes you can and sometimes I wouldn't notice it.

Q. Isn't the smoke noticeable all around it?

A. I suppose so.

Q. Don't you know that anybody who lives in that neighborhood knows when the plant is closed down?

1493 A. A man can get so that when a train is running by him he won't turn his head to look at it.

Q. Answer my question?

A. How was it?

Q. I said, isn't it so noticeable that anybody on earth passing along can tell that it is running?

A. He could if he was noticing it; I wasn't paying any attention to it at that time.

Redirect examination.

By Mr. W. B. MILLER:

Q. You have referred to a Mr. Vestal while you were giving your cross-examination: Is that Mr. J. P. Vestal who sits here by Gen. Drake who has cross-examined you?

A. Yes sir.

Q. And who has been suggesting to Gen. Drake during the cross-examination what questions to put to you?

A. Yes sir.

Q. And how far do you live from that Mr. J. P. Vestal in Epworth?

A. It is from three hundred to five hundred yards, I guess.

And further deponent saith not.

J. B. KINSEY,
[SEAL.] By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this 6th day of November, 1914.
R. S. C. HUTCHINSON,
Commissioner.

Mileage, 220.

Next witness, M. C. Goss, for defendant in rebuttal, having been duly sworn, testified as follows:

1494 Examined by Mr. W. B. MILLER:

Q. How old are you Mr. Goss?

A. I am fifty-two years old.

Q. Where do you live sir?

A. I live in Epworth, Georgia.

Q. How long have you lived there?

A. I have lived in that little town for—oh, I mean, inside of a mile of the place, for three years; and if you go a little further back I have lived in less than three miles and a half of Epworth for thirty years.

Q. State what business you are engaged in and have been for the last two or three years?

A. Well, sir, I mix it a little; I work at the carpenter's trade some, and kind of make some garden patches and farm some.

Q. State whether there was any damage done down in your section of the country, I mean by that, the Epworth section, from the first of July up to the fifth of July of this last year?

A. How is that; from when?

Q. From July 1st, this last July, the first of July, up to the fifth?

A. If there was I didn't see it.

Q. Well, if there had been any substantial damage down there, would you have seen it?

A. Why, I was looking out to see if there was anything done to

my stuff, to my garden stuff all along, and I didn't see anything at that time.

Q. Why, were you looking out for the dates about that time, Mr. Goss?

A. Well, sir, it was said that one company was paying some damage to the state and the state was to pay it to the individuals that were damaged, and my idea was, if I was damaged enough to be worth anything, to put in a claim for it.

1495 Q. Well, now, if the smoke would come over into that section so as to damage your neighbor's garden or fields or orchards, would it not damage yours also?

A. Well, if it was to go to them it would; but some times it might go to one place, and another place not far off not get to that; it might do that.

Q. But did it ever come over and just settle on one of your neighbor's and damage him, and not damage the balance?

A. If it did I don't know it.

Q. You never saw it play a prank like that?

A. No sir, I never caught it at anything like that.

Mr. LAMAR HILL: We except to that as leading.

Q. What kind of growing season was down there during the early season of this year; did you have any drouth or wet weather?

A. Well, there was a drouth I call it.

Q. Did it affect the crops and vegetation any?

A. I think it affected my stuff a right smart—a little.

Q. How long did it last, that drouth?

A. Well, I can't say as to that, just how long.

Q. Well, probably?

A. Why, it was five to six weeks that there wasn't enough of rain to be called a season, I think.

Mr. DRAKE: I except because original evidence.

Q. Now, you lived there in 1913, too?

A. Yes sir.

Q. Was there any damage in your section from May 1st up to the middle of May, 1913, or in the entire month of May, 1913, from smoke?

A. I can't tell you, sir, about that; I don't remember noticing that, in those dates.

Q. You didn't file any claim for damages if there was any done?

1496 A. No sir, not in 1913.

Q. You did live down in there before those acid plants were put in operation at the two copper companies?

A. Yes sir; I lived in about three and a half miles from Epworth, yes.

Q. How about the conditions as to smoke damage since those plants have been put in operation, say since 1908, how do they compare with what they were before they were say back about 1907 and during 1907?

Gen. DRAKE: We except because the question calls for original evidence and not rebuttal evidence.

A. Well, I don't think it has been quite as much damaged since they were put up as along before, is the way I look at it.

Q. Was there any damage done down there of consequence until that tall stack was built in 1906?

A. Oh, I don't remember.

Cross examination waived.

Further deponent saith not.

[SEAL.] M. C. GOSS,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this Nov. 6th, 1914.
R. S. C. HUTCHINSON,
Commissioner.

Mileage, 220.

Next witness, J. R. HERREN, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by Mr. MILLER:

Q. How old are you sir?

A. I am sixty-seven.

1497 Q. Where do you live in Georgia?

A. Where do I live?

Q. Yes sir.

A. I live at Epworth.

Q. How long have you lived at Epworth, Georgia?

A. About eight years, it will be in December.

Q. In what business are you engaged down there?

A. I am selling goods now and farming a little, and gardening, and so on.

Q. State whether there was any damage done down in your section from smoke from the first up until the fifth of July this last July?

A. Well, I think it was somewhere along—I couldn't be right positive, but I think it was about from the sixth, seventh and eighth, when the smoke came over there; I don't remember the date.

Q. In July or June?

A. That was in July, I think; July, you asked me?

Q. Yes sir, I am asking you about July, if there was any from the first up to the fifth?

A. Well I don't remember of any smoke that has done any damage.

Q. Are you more or less through the woods and fields in your section?

A. Why I haven't been out a great deal this summer; I have been around the place where I live and off may be three or four miles from home; I haven't been out much.

Q. If there had been any substantial damage done down through that section to the crops and orchards and fields do you think you would know it?

A. I think I would.

Q. Has there been any damage of consequence this last year, that is, the year 1914, at any time throughout that section, from smoke?

1498 A. Well, there was a little done along in July about, which scorched the beans and one thing and another, but not to amount to much. We made fine crops of beans there; we canned a good many of ours, and Dr. Weeks canned something over two thousand cans, I guess.

Q. And did you file a claim for damages against anybody?

A. Why I did along in May; I thought we were damaged pretty bad or scorched up right smartly, and I filed a claim and then, later on, there came a rain and it seemed like everything came out all right; we were suffering with a drouth a great deal, and I would have withdrawn the claim if I had had the chance.

Mr. HILL: We except to the last part of the answer as not in rebuttal, and immaterial.

Q. The claim that you filed, then, was for damage that you thought was done in May of this year?

A. Yes; on the corn, about the time it first came up.

Q. That was when, about?

A. That was, I think along about the middle of May when I planted my corn, and it came up, and I planted late.

Q. And you say — had a drouth along that time?

A. Yes; we have had considerable drouth all the summer, the greatest drouth in my opinion in several years.

Q. That affected the crops did it?

A. Yes sir; we thought the crops were ruined until on up in July; it was worked over two or three times and hadn't had any rain.

Q. Over how many months or weeks did that drouth extend this last season?

A. I suppose six or seven weeks; I don't remember just exactly.

Q. You say when there did finally come a rain, the vegetation put out again?

1499 A. Yes sir, it came out fine; we got the best crops around there that we have had since I have been in Epworth.

Q. And that has been how many years?

A. Eight years, it will be in——

Gen. DRAKE: We except to all that evidence as being irrelevant, and not in rebuttal.

Q. If you had had a chance you would have withdrawn your claim against the Ducktown Sulphur, Copper and Iron Company?

A. Yes sir, I would.

Gen. DRAKE: We except to that.

A. (cont'd). After everything begin to come out there came a

rain and everything looked so promising I thought we were not damaged any; we were damaged more by the drouth than anything else.

Q. Have you ever know- of a better crop in North Georgia than was raised down there this year?

A. I never have.

Q. And you have lived in North Georgia for how many years?

A. I have been there eight years; I have been in North Georgia a little longer; I lived in the upper end of the county two or three years before I came to Epworth.

Q. Have you got any memoranda with you as to the exact date when the smoke visited that section this year?

A. This year?

Q. Yes sir, you thought it was along about——

A. No sir; I haven't got any memoranda written down.

Q. You said, as I recall, that it was about the sixth to ninth of July; what I want to get you to be positive about is to refresh your recollection, if you can, and tell us whether that was from the sixth to the ninth of July, or the sixth to the nineth of June?

Gen. DRAKE: We except to that, as the witness has already testified on this subject two or three times, and said positively it was *in* July the sixth to the nineth.

1500 Mr. MILLER: I want to get the witness to say, if I can, positively that it was the sixth to the nineth of June, and I want the witness to be satisfied in his own mind, in his own conscience whether I am right, or not.

Gen. DRAKE: And I except to it for the further reason that the question is improper, as it suggests the answer to the witness.

Mr. MILLER: I want to suggest it to him to be right about it before he answers.

Q. Now, Mr. Witness, satisfy yourself on the point, and say whether it was the sixth to the nineth of July, or the sixth to the nineth of June; if you can refresh yourself in any way do it.

A. Well, it was in July.

Cross-examination by Gen. DRAKE:

Q. Mr. Herren, you say you have had the best crops over there this year, you have ever had since you have been there?

A. Yes sir.

Q. Then you would conclude from that, would you not, that a drouth in North Georgia is good for the crops, if this was the worst drouth you ever saw?

A. I believe, sir, it is, through May and June, good for crops; we get our corn cleaned up, and the rain comes and it makes the corn. I have always heard that.

Q. You did have a great deal of smoke over there in May did you not?

A. In May?

Q. Just before you filed your claim for damages, didn't you know it boiled over there every day through the woods?

A. We had some smoke over there, and it affected the stuff some, yes.
Q. You could see it and smell it too, could you not?
A. Yes sir, I could smell the smoke.

1501 Redirect examination by Mr. MILLER:

Q. That was May of this year?
A. Yes sir.
Q. You could see where that smoke was coming from that General Drake has talked about, too could you not?
A. Well, I don't know that I noticed about that, I supposed it was coming from the Tennessee Copper Company.

Mr. HILL: We except to that as a supposition and a conclusion.

Q. The fact is when the smoke comes down there it comes from the stack of the Tennessee Copper Company?

Gen. DRAKE: We except to that.

A. Everybody always thought so; I don't know whether it does or not.

Gen DRAKE: We would rather the court would pass on that issue.

And further deponent saith not.

J. R. HERREN,
[SEAL.] By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this Nov. 6th, 1914.
R. S. C. HUTCHINSON,
Commissioner.

Mileage, 220.

Next witness W. W. THRASHER, for defendant, in rebuttal, having been first duly sworn, deposed as follows:

Examined by Mr. W. B. MILLER:

Q. How old are you, sir?
A. I am forty-nine years old, or was the seventeenth day of last September.
Q. Where do you live; in what part of North Georgia?
1502 A. I live in about six miles of Copperhill, Tennessee, south; I live about six miles from the line between Tennessee and Georgia.
Q. And you live in what direction from Epworth?
A. South.
Q. Do you own any land down in that section?
A. Yes sir.
Q. Do you live on it?
A. Yes sir.

Q. Do you cultivate it?
A. Yes sir.
Q. Tell me whether there was any damage from smoke to your property or in your section from the first to the fifth of this last July?
A. This last July?
Q. Yes sir.
A. Well, there was smoke over there I remember during that month, but just what time I could not tell you; but there was some smoke through that country during July.
Q. Did you keep the date with a view of filing a claim against anybody?
A. Of filing a claim against the Tennessee Copper Company?
Q. Yes sir.
A. Yes sir.
Q. For damage. Well, now, had you put down the date in order to know when it occurred?
A. Yes. My wife put them down, and I turned them in, but — save my life I couldn't tell you; I haven't given them any thought; my wife put down the date the smoke came over there and to same my life I can't tell you the dates.
Q. What were you doing during those dates?
A. I was in the mines.
Q. And were you in the mines during the month of June?
A. Yes sir.
1503 Q. Of this last year?
A. Yes sir.
Q. That is this year, 1914?
A. Yes sir, this year, and last year; I haven't lost much time for two years.
Q. Do you remember whether or not the smoke drifted over in your section during the month of June, this last June?
A. I do not, sir; I do not know what time it came there.
Q. You don't know whether it was June or July, or what month it was?
A. No sir; it came there in both months to some extent, June and July, too.
Q. But you don't know what dates?
A. I don't know the dates. I had them there but I can't tell you what they were to save my life.
Q. Well, what was the extent of the damage finally compared to what it was before they put up those tall stacks?

Gen. DRAKE: I except to that question as calling for original evidence and not being in rebuttal.

A. Except for the last two years, the damage has not been as bad there as usual, for the last two years.
Q. How does it compare to what it was before the acid plants were erected?
A. It is not as bad as it was.

Gen. DRAKE: We except to that question as calling for original evidence and not in rebuttal.

A. (cont'd). I would like to know what company you are asking me on, now, about this damage. I understand I am subpœnaed here for the old company, the Ducktown Sulphur, Copper and Iron Company; I understand it that way.

Q. Yes. Well, now, may be you can tell us what company it is that, when the smoke is sent out down your way, sends it out?

A. Yes sir, I think I can.

1504 Q. Then which one?

A. I think the Tennessee Copper Company does.

Gen. DRAKE: We except to that as a conclusion, and not in rebuttal.

Cross-examination by General DRAKE:

—. Mr. Thrasher, you have worked for the Ducktown Company; you work for the Ducktown Company, don't you, the Ducktown Sulphur, Copper and Iron Company?

A. Yes sir.

Q. In the capacity of foreman in a mine?

A. No; I am a contractor.

Q. Is it because you have worked for the Ducktown Copper Company that you think it does not send out the smoke that does the damage, or what is it that causes you to think that?

Gen. DRAKE: We except to all the direct evidence of this witness as incompetent and irrelevant, and not being anything in rebuttal.

Q. (cont'd). Tell us why you think so?

A. Because I have studied and watched that, and their stack is not over forty or fifty feet high, and the smoke comes right out from it and settles down on the ground; and I have stood and watched it for hours at a time and I don't believe the Ducktown Sulphur, Copper and Iron Company has ever damaged the State of Georgia a nick*le*.

Q. Where does this smoke come from?

A. It comes from that high*t* stack right there, from the Tennessee Copper Company; there is where it comes from.

Gen. DRAKE: We except to all the evidence of this witness as being a conclusion and undertaking to settle the issues in this law-suit.

And further deponent saith not.

W. W. THRASHER,
By R. S. C. HUTCHINSON,
Commissioner.

[SEAL.]

1505 Sworn to before me this November 9th, 1914.

R. S. C. HUTCHINSON,
Commissioner.

Mileage, 220.

Next witness A. H. CHASTAIN, for defendant, in rebuttal, having been first duly sworn, deposed as follows:

Examined by Mr. W. B. MILLER:

Q. Mr. Chastain, where do you live?
A. I live in Fannin County, Georgia.
Q. About how far from Epworth?
A. Well it is something like three miles and a half or four miles.
Q. What direction from Epworth?
A. Well, it is nearly south, pretty nigh south.
Q. What business do you follow?
A. Why, I have been working at the mines for twelve or fourteen years.
Q. Do you raise any garden vegetables, or corn, or crops of any kind?
A. Yes sir, I farm a little in patches.
Q. You live on a farm do you?
A. Yes sir, my family lives on a farm.
Q. You have farming carried on?
A. Yes sir, a little every year.
Q. Tell us if there was any damage down in your section from July first to July fifth of this last year, this last July?
A. I don't know of any if there was.
Q. You didn't discover it if there was any in that country?
A. Not down there I did not, no sir.
1506 Q. In going back and forth to your work, did you pass through the crops and fields and along the woodland, so that you could see whether any damage was being done or not?
A. I came the big road, the public road from the mines home every Saturday night and back on Sunday night.
Q. Does that road wind through the woods and through the fields?
A. Yes sir, mostly through the woods; there are some fields along the route.
Q. If there had been any substantial damage down there in that section, would you know and see it?
A. It looks like I would have seen some; I never noticed any damage done to crops through there.
Q. Was there any damage done down through that section during the month of May, 1913; that was this last May a year ago, from the first of May up to the middle of May?
A. I don't recollect whether there was or not; I couldn't tell about that.
Q. If there was was it *if* any substantial amount?

Mr. DRAKE: We except to the question as suggestive of the answer.

A. I never had any to amount to anything. Smoke came in there and damaged a little; I noticed the potatoes pinched a little of my Irish potatoes.
Q. Mr. Chastain, how long have you lived down there?
A. I have been living there all my life nearly, excepting about two or three years away from there.

Q. Were you growing crops and gardens and orchards last year?
A. I didn't have any orchard only just a few trees where I live there.
Q. If there had been any substantial amount of damage, any damage of consequence done down through in the month of May
1507 1913, do you think you would have known about it?

Gen. DRAKE: I except to the question for the reason the witness has already answered it twice, and said he did not remember especially about the date last year.

Q. I say, if there had been any at that time of any considerable amount, do you think you would remember about it?
A. It looks like I would: I haven't seen all the people to know whether the smoke hit anything to amount — anything. Down in Harpertown I notice- some trees there I believe there were some sulphur fumes burnt it along this last June.
Mr. FOWLER: You mean June, 1914?
The WITNESS: Yes sir, 1914; yes sir.
Q. You say that was this last June?
A. Yes sir.
Q. What day this last June?
A. Well, it was along about the eighth and ninth, I believe of June; somewhere along there, the best I can recollect.
Q. And that was how far from the plant of the Tennessee Copper Company?
A. Why it was half a mile, I reckon, from the furnace across to where I noticed these trees being burnt; it might have been a mile.
Q. That is at Harpertown, a settlement near the Tennessee Copper Company's plant?
A. Yes sir; Harpertown is just across the river.
Q. Just across the river from the Tennessee Copper Company?
A. Yes sir.
Q. You spoke of your potatoe crops?
A. That was last June, I noticed my potatoes; I don't know whether it was the smoke; I judge the smoke did it; my leaves were crisped.
Q. That was June 1914?
A. 1914, that was last—no, that was this year; that is right; this year.
1508 Q. What about the drouth; did you have a drouth down through your section during this last spring, and if so how severe was it?
A. Yes sir, it was dry all spring and on up until June and July, very dry: that is, potatoes—those potatoes, I suppose it was the smoke crisped them; that was my idea about it; I was not at home to know anything about any smoke being there, but when I went there I noticed the tops of the leaves were crisped a little, and I take it that the smoke did it.
Q. Irish potatoes are very tender?
A. Yes sir, they are very tender.
Q. Was the damage of consequence?

A. Well, I couldn't say.

Gen. DRAKE: We except to the question as it calls for a conclusion.

A. (Cont'd.) I don't think it stopped making potatoes. It was the drouth that ruined our potatoes mostly.

Cross-examination by General DRAKE:

Q. I believe you say you have been working for the Ducktown Sulphur, Copper and Iron Company?
A. For the Polk County Company.
Q. For the Polk County Company?
A. I mean the Tennessee Copper Company.
Q. You were working for the Tennessee Copper Company?
A. Yes sir; I was not working for the Ducktown Sulphur, Copper and Iron Company.
Q. You go in the mines, do you?
A. No sir. I was—I kept the change house, furnished oil and looked after the oil.
Q. You stayed over in Copperhill then from Sunday evening until Saturday evening did you; you stayed over there most of the time?
A. I came home Saturday evening and went over there on Sunday.
1509 Q. You used to stay over there all of the time; is that what you mean?
A. I stayed there and came home Saturday nights and went back Sunday nights.
Q. You answered Mr. Miller a little while ago that you never saw that damage in going back and forth last year on the crops?
A. No sir.
Q. You did see quite a little bit of trees burnt all through there didn't you?
A. I saw those trees up in Harpertown.
Q. You saw them down in Harpertown?
A. No sir, just out in Harpertown was all I noticed.
Q. All you noticed?
A. Yes sir, all I saw.
Q. There were plenty of others burnt further south, were there not?
A. I can't tell you; if there was I never saw them.
Q. Well, if the smoke came over in there, of course you couldn't see it or smell it because you were not over there were you?
A. I say, I haven't been there to see any smoke, but I say, what I was telling you about was my potatoes.

Redirect examination by Mr. MILLER:

Q. If the smoke had damaged the timber and the orchards and the gardens down through there you could see that as you went back and forth home?

A. Yes sir, I think I could. I had as fine peaches on my place as I ever ate.

Q. You say you work then for the Tennessee Copper Company?

A. Yes sir.

Q. Now at this time, along about the eighth or nineth of June, when you saw your pototoe vines had been scorched, I will
1510 get you to state whether or not the Tennessee Copper Company was running?

A. Yes, they were running then.

Recross-examination by General DRAKE:

Q. The Ducktown Sulphur, Copper and Iron Company was running also, was it not, the D. S. C. & I. Co.?

A. Yes sir, I reckon so. I suppose they were running I wasn't over there but I was working for the Company at that time, the Polk County.

Q. Have you ever worked for them?

A. I worked for them a good many years back; I worked for them.

Q. How many years did you work for them?

A. Well, I don't recollect how many years, I worked for the Ducktown, Sulphur, Copper and Iron Company, I don't know; I commenced helping when they were putting that track in there and put in the tracks from the Junction over to the old Isabella mine, and worked for them sometime; and then I worked for the Polk County I think I have worked for them about twelve years, for the Polk County.

Q. You have been working for the Copper Companies in that class of work how long?

A. Well, I have been there ever since it started up this last year; this last company you know. I have been away from there for as much as two or three summers, I believe.

Redirect examination by Mr. MILLER:

Q. You have been working for the last few years for the Tennessee Copper Company; that is the long and short of it?

A. The last few years?

Q. Yes.

A. I reckon I worked for as much as ten years on a straight for the Tennessee Copper Company.

And further deponent saith not.

A. H. CHASTAIN,
[SEAL.] By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before this November 6th, 1914.

1511 R. S. C. HUTCHINSON,
Commissioner.

Mileage, 220.

Next witness, W. P. HARPER, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by Mr. MILLER:

Q. What business are you in Mr. Harper?
A. Well, I farm and I am a cattle inspector for Gilmer County this year.
Q. You are cattle inspector?
A. Yes sir.
Q. As cattle inspector as- you required to be out in the woods much or little?
A. Yes sir, I am in the woods ever- day, or most every day.
Q. When you were out inspecting cattle did you pass through the woods and fields of the people generally in North Georgia?
A. Yes sir, through the woods and some on roads.
Q. Did you pass by fields and orchards?
A. Yes sir.
Q. Well, where do you live?
A. I live down in Gilmer County; I live two miles and a half west of Cherrylog.
Q. I will get you to state whether there was any damage done down through your section by copper smoke this last year from the first to the fifth of July?
A. Of this year?
1512 Q. Yes sir.
A. No sir, I didn't notice any.
Q. If there had been any damage of consequence done down there at that time, would you not have noticed it?
A. Yes sir, I think so; I would have been apt to notice it.

Gen. DRAKE: We except to that evidence as being incompetent, not being in rebuttal of any proof offered by the State of Georgia, as the evidence of the State in chief was confined to Fannin County.

Q. Were you living down in that same section in the month of May 1913?
A. Yes sir.
Q. Was there any damage done through there from the first to the middle of May of that year?
A. I don't remember of any being done in the last year, that is, in that month. Now, the smoke was done along in June and July; we had some smoke in June and some in July.
Q. Of last year?
A. Yes sir.
Q. But none in May?
A. No sir; I don't think we had any in May.

Gen. DRAKE: We except to this evidence regarding last year in the month of May, from the first to the sixteenth on the ground that it is not in rebuttal of the State's evidence on that subject.

Q. Now, if the smoke had issued from either the plant of the Ducktown of the Tennessee Copper Company, and had simply

boiled over into the North Georgia section from early in May on up until June, either of last year or this year, would you have necessarily have seen and known about it?

A. Yes sir, it would have been apt to have showed on my *my* crop some.

1513 Q. What occasion have you had to be out on the top or face of the mountains that face the Ducktown basin and that form a sort of southern rim of that basin?

A. You mean out about Flat top Mountain?

Q. Yes sir, any of those mountains where you can see the plant of the Tennessee Copper Company, facing that?

A. I had some spraying lots out there; I had some on Mr, Cox's place on the Flat Top; I had one at the Holloway Gap and one on the Fowler Field; that is all on the mountain.

Q. What do you mean by a "spraying lot"?

A. A place where people get up their cattle—the cattle that is on the range—get them up, to have them brought out and inspected and sprayed.

Q. You wanted to get the ticks off of them and keep them off?

A. Yes sir.

Q. And constantly were you out in that vicinity, the vicinity of your spraying lots that you have described?

A. Every two weeks.

Q. How long would you stay out there when you would go there?

A. I would stay a day out there, twice a month; I was out there twice each month, and spent one day on the mountain.

Q. How far apart were these spraying lots; you seem to have had three localities?

A. Well, they are about a mile and a half apart.

Q. And the people bring their cattle there from the various sections on the range to have you spray them?

A. Yes sir.

Q. You met and talked to people who had their cattle in that range, did you?

A. Yes sir.

Q. Now, tell me whether there has been during this last year, 1914, any substantial damage done down through that section to the timber or the crops?

1514 Gen. DRAKE: We except to the question because it suggests the answer.

A. I haven't seen but mighty little; the crops are mighty fine down in Gilmer County this season.

Q. Considering the drouth that you have had in that section as I understand, how do your crops compare to what they are in other sections of the country that are far removed from the Ducktown section?

A. I have not been away from Gilmer County very far; I have been in Gilmer County pretty well all the year.

Q. You did have a drouth down there?

A. Yes sir, we have had some dry weather down there; but I say

crops are good, much better than common; we have had an extra crop of most everything with the exception of early beans.

Q. What is the nearest town of any size to you?

A. Ellijay.

Q. How far do you live from Ellijay and in what direction?

A. I live seven miles northeast of Ellijay.

Gen. FOWLER: What was the matter with your beans?

The WITNESS: Well, I couldn't say, unless it was the dry weather. We didn't have as good crops——

Mr. HILL: We except to the question and the answer as calling for and being a conclusion without any facts on which to base it.

Cross-examination by General DRAKE:

Q. Mr. Harper, have you or not had a suit or claim against these copper companies for damage?

A. I put in a claim before the Arbitrators last year.

Q. Did you ever have any before then?

A. No sir.

Q. You never filed a claim with any attorneys or anybody?

A. No sir.

1515 Q. Did you have a claim last year?

A. Yes sir, I put in my claim before the Arbitrators last year.

Q. And you swore to that claim and they settled it with you, did they not?

A. No sir, they did not settle it.

Q. You swore to your claim?

A. No sir, I didn't swear to it.

Q. You just put it in?

A. I just put it in.

Q. I believe the board didn't get to Gilmer County?

A. No sir, they didn't get to anybody there.

Q. They just paid the Gilmer County crowd?

A. I don't know what became of them, we didn't get anything.

Q. Is there any other W. P. Harper in Gilmer County?

A. Yes sir, I have an uncle down there in Gilmer; he got some money out of Ducktown last year.

Q. You spoke of having seen smoke down there. You have seen a great deal of smoke in those mountains in your travels?

A. This season?

Q. Last season?

A. I was not in there any last season in the mountains.

Q. You were in Gilmer County last year?

A. Yes sir.

Q. And you saw smoke in there last year didn't you?

A. We had some smoke there last year.

Q. Did you smell it?

A. Yes sir.

Q. Have you had any in there any time this year?

A. Very little; we had a little this year, but none to amount to anything this year.

Q. You know, sir, how the smoke does, don't you, Mr. Harper, with respect to not going to the same places on the same
1516 days; some days it will be in one cove and may be the next day it will be in another cove?

A. Yes sir, it will do that.

Q. And it don't go to the same place the same days?

A. Well, it generally comes down when the wind is from the north, it brings it in Gilmer County.

Q. And it has to be from the north before it will hit you, don't it?

A. Yes sir.

Redirect examination by Mr. MILLER:

Q. When you say your kinsman, Mr. Harper, got some money out of Ducktown, you don't mean he got it from the Ducktown Company?

A. My understanding was about that that he sued before the Farmers' Union by a lawyer in Atlanta by the name of—I believe his name was Duckworth or Drake, or something of that sort.

Q. You have referred to General Drake; the General Drake you have referred to was the General Drake who has examined you, was it not? And who got some money for your kinsman from the Tennessee Copper Company?

A. Yes sir, I think so.

Q. Now, you say you put in a claim for damage; your claim was against the Tennessee Copper Company also?

A. Yes sir, altogether against the Tennessee Copper Company; I really didn't think that the other company was doing any damage, or I don't know that they were not.

Mr. HILL: We except to that as being a conclusion.

Q. Now, suppose, Mr. Harper, that during this last May, on the second, the smoke was all over Turniptop Mountain and Flat Top Mountain and Bush Head Mountain, and on May eighth it was all over the river north of Ellijay and on Turnip Top Mountain and on May eleventh it was all over Turnip Top Mountain and Flat Top Mountain and Bush Head Mountain; and on May 13th it
1517 was all over the Ellijay River Valley *nad* Turnip Top Mountain; and on May 14th it was all over Flat Top Mountain and Bush Head Mountain and Turnip Top Mountain; and on May 16th it was all over Flat Top and Bush Head Mountains and Turnip Top Mountain; and on May 18th it was all over Flat Top and Bush Head and Turnip Town Mountains; and on May 25th it was all over Flat Top Mountain and Bush Head Mountain and Turnip Town Mountain; and May 26th it was all over Flat Top and Bush Head and Turnip Town Mountain; and on May 28th it was all over the Ellijay River Valley and north of Ellijay and east of Turnip Town Mountain *Mountain;* and on May 29th it was very strong in the Ellijay River Valley and on the mountains north and east of Ellijay; and on May 30th it was all over the Ellijay River Valley strong and

on the mountains north and east of Ellijay and on May 21st all over the Ellijay River Valley and the mountains north and east of Ellijay and on June 1st, it was all over the Ellijay River Valley on the mountains; and on June 5th it was all over the Ellijay River Valley; and on June 8th it was strong all over the Ellijay River Valley an- Turnip Town Mountain; and on June 9th it was all over the Flat Top Mountain, in the Ellijay River Valley and Turnip Town Mountain; and on June 10th it was strong all in the Ellijay River Valley and all over Flat Top and Bush and Turnip Town Mountains; and on June 11th it was all over Turnip Town Mountain and Flat Top Mountain and Bush Head Mountain; now, if the smoke had been there in the volume indicated by this question or anything like that, do you think you would necessarily have know- about it and seen it?

A. Yes, sir, I think I would.

Q. You say that is not correct?

Gen. DRAKE: We except to that as being leading, and because the witness had not testified that such conditions prevailed.

A. I didn't see any. It is like I have said, we have had
1518 some smoke but I haven't seen but little damage done; I haven't seen anything bit with *with* it.

Q. Have you seen anything to even approximate the conditions related in my last question, namely, that the smoke was all over those sections on those dates?

A. No, sir, I haven't seen it down but mighty little this year; it has been down a few time-, but it is mighty little.

Cross-examination by Gen. DRAKE:

Q. All you mean to say is that if it was down there in those sections on those days, you didn't see it?

A. No sir, I didn't see it.

Q. You don't know where you were on those days he has named?

A. I could if you wanted to get at my dates.

Q. I am talking now, you couldn't remember where you were on the fifth of June, could you, nor on the fifth of May, nor the 10th of May; I am asking you, Mr. Harper, can you remember where you were on those days?

A. I could soon get it up.

Q. I know, but answer my question; can you remember now where you —?

A. Right where I was at?

Q. Yes sir.

A. No sir, I can't tell you right plumb where I was at.

Q. And you don't know on a single day where you were?

A. No sir, I don't know right the place where I was at, but I was working in my territory.

Q. You have said that the smoke some days went to one place and on another day it would go another place, would it not?

A. Yes sir, that is the way it went. It comes down this way, and it will come over, when the wind is from the north, the smoke will come down and it will kind of spread out, and probably the next

day we will not have any smoke at all; it will be perfectly
1519 clear; we can't see any.

Q. You don't cover the whole of Gilmer County?

A. No sir.

Q. You have a certain section?

A. Yes sir; I have got the north west territory up there; my territory reaches down to Turnip Twon County Road, leading from Ellijay in the direction of Dalton.

Q. You have the north west corner of the county?

A. Yes sir.

Q. Your territory don't take you over east to Ellijay and that Ellijay Valley country?

A. No sir; I do not work in Turnip Town Mountains; I just go to the railroad, but I haven't seen any smoke to amount to anything this season.

Q. You did not work in the Turnip Town Mountains nor in any of those mountains east of the railroad, did you; your work didn't carry you in there any at all?

A. No sir.

Q. And the conditions you have testified to are confined to the northwest quarter of Gilmer County?

A. Yes sir.

Redirect examination by Mr. MILLER:

Q. What mountains are included in you- territory and what mountains do you traverse?

A. Well, I am in the Potatoepatch Mountain.

Mr. FOWLER: Bush Head?

The WITNESS: No sir, I don't go on the mountains I am in that section I have a spray-pen right at the forks of Bush Head and Ducktown Road; that is right at the Bush Head Mountain; it is within half a mile of Bush Head Mountains but I didn't go out on top of the mountains.

Q. You say you go over near the foot of the mountain?

A. Yes sir, in half a mile of the mountain; and I also
1520 have a lot that I spray out in the Bear Den Mountain. I have been on the Bear Den Mountain ever since May, every two weeks.

Gen. DRAKE: I want to except to this witness's answer to General Miller's general hypothetical question, on the ground that the witness has not been in, nor seen the conditions that obtain in all those mountains east and north east of Ellijay.

Q. Is the Bear Den a spur of Bush Head Mountain?

A. Yes sir, it is west of Bush Head Mountain.

Q. And how about Flat Top Mountain?

A. That is west of Bush Head.

Q. You have been over and along that mountain?

A. Every few weeks.

Q. You have been on the sides of those mountains that face towards the Ducktown Copper Company's plant?

A. Yes sir; if you get on any of those mountains any of those high places, you case see the stack of the Tennessee Copper Company.

Q. Can you see the one of the Ducktown Company?

A. That is the Isabella Company?

Q. Yes sir.

A. No sir; no sir, you cannot see it.

Q. You can see the other one though?

A. Yes sir, you can see the other one; you can see the smoke coming out of the stack all right at about three places on top of the mountain there.

Q. You told General Drake that you could locate yourself by dates, if desired by him. I want to know if you have that book with you?

A. No sir, I haven't got it with me.

Q. You have no memoranda that shows the exact days when you were at any particular locality?

A. No sir. You see, went there ever- two weeks; that is twice a month.

1521 Q. Do you have a regular day to visit those sections?

A. Yes sir; every fourteen days.

Gen. DRAKE: I except to that, because it has been gone over thoroughly.

Q. Every fourteen days?

A. Every fourteen days.

Q. Did you begin on the first of the month or when?

A. No sir, I didn't begin on the first of the month; I would have to go to my book to get the exact dates. Now, my spraying days on the Flat Top Mountain are on Saturdays; I could go on the calendar and get the dates exactly.

Q. Now, how about your spraying days on the other mountains?

A. On the Potato Patch?

Q. Yes sir.

A. My spraying days on the Potatoepatch is on Thursday and Friday; I work there two days.

Q. Where are you on Tuesday and Wednesday?

A. On Tuesday I am at Old man Witherow's; that is down in the Valley.

Q. Which Valley?

A. Mountain Town Valley.

Q. That is the Valley of Mountaintown Creek?

A. Yes sir. And on Wednesday I am at Tom Park's. that is in Mountaintown Valley, on Mountaintown Creek.

Q. Where would you be on Tuesday?

A. On Tuesday I am at Witherow's.

Q. And on Mondays?

A. Well, on Monday I am at Hirshel Harper's; that is down the Mountaintown; that is every other week, you know.

Q. Yes. Then you were through a section of country there pretty extensively as I understand?
A. Yes sir; I am out on the work every day except Sundays.

Recross-examination by Gen. DRAKE:

1522 Q. Did you answer a while ago *the* you made all these points every two weeks?
A. Every two weeks; every fourteen days.

And further deponent saith not.

W. P. HARPER,
[SEAL.] By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this 6th day of November, 1914.
R. S. C. HUTCHINSON,
Commissioner.

Mileage, 260.

Next witness, T. M. BENNET, for defendant, in rebuttal, having been duly sworn, deposed as follows:—

Examined by Mr. MILLER:

Q. Where do you live; in what *proption* of Georgia?
A. I live in Gilmer County, one mile north of Ellijay.
Q. What business do you follow?
A. I farm.
Q. You own a farm down there?
A. Yes sir.
Q. How long have you lived there and farmed in that section?
A. I have been there I guess thirty-five years, or a little more, off and on.
Q. Well, state whether or not there was any damage done down through your section by smoke from the first to the fifth of July, this last July?
A. Well, if there was, I couldn't detect it.

Gen DRAKE: I except to that question because it is not in rebuttal of the State's evidence on those dates.

1523 Q. Was there any damage done there during the months of May of last year, that was 1913, between the first and the middle?
A. Down there at my place if there had been any damage done there at all, I never saw it.

Gen. DRAKE: We except to that question and answer because it is not in rebuttal of the State's evidence on that subject.

Q. Do you live near any water course or mountain?
A. I live on Ellijay River.
Q. You live on Ellijay River.

A. Yes sir, more than a mile above Ellijay, on the river.
Q. You are acquainted up and down what is known as the Ellijay River valley, are you?
A. Yes sir.
Q. For how many miles up and down that river are you acquainted with that Valley?
A. Oh some five miles below Ellijay up to the head waters of Owltown.
Q. How far is it up to the head waters of Owltown (Wadetown)?
A. I couldn't say the distance; I guess it is somewhere near eighteen or twenty miles.
Q. You are acquainted probably eighteen or twenty miles one way and about eight miles the other?
A. About five miles; I am pretty well acquainted five miles below.
Q. What character of crops did the people grow down through that section this year?
A. Reasonably good crops.

Gen. DRAKE: We except to that as being original evidence and not in rebuttal.

Q. Did I understand you to say if there was any damage done through that section at all you did not recall it?
A. No sir, I cannot discover it, if there is.
1524 Q. If the smoke had drifted over through that section of country through the Ellijay River Valley, and just flooded it there repeatedly during the month of May and the month of June of this last year, would you necessarily have seen and known about it?
A. Well, it might have been possible it could have scattered a little and I never see it. I didn't notice it; understand I never noticed any from up there at all; I never smelt none.

Gen. DRAKE: I except to the question and answer for the reason it is not in rebuttal of the State's evidence on that subject. The state never claimed or proved that they flooded that community with smoke this year or last year.
Mr. MILLER: If the community referred to by you is meant the Ellijay River Valley, I don't want to examine the witness any further on that point.

Q. Mr. Bennett, what kind of crops were grown down in your section during the year 1913?

Gen. DRAKE: We except because original evidence, and not being in rebuttal.

A. I don't remember; I can't answer that question; I don't remember.
Q. That is last year; I ask you what kind of crops last year were grown?
A. It was a very good crop last year; it was a very good crop

yrear; but I never paid any attention to it; I wasn't there; I was attending to my business this last year, I farm myself or have it done; I stay on the farm.

Q. How many acres of land do you own down there?

A. Betwixt 250 and 300, part of three lots; I don't know exactly; part of three lots.

Q. You grow various kind of crops?

A. Yes sir.

Q. Garden and field crops?

1525 A. Yes sir.

Q. Have you any orchard on your place?

A. Yes sir, I have an orchard.

Cross-examination by General DRAKE:

Q. Mr. Bennett, you say they never have damaged you where you live?

A. If they ever have, I have not been able to detect it.

Q. None whatever that you could detect?

A. No sir, no.

Q. You are in a good place down there to get out of it are you not?

A. I don't know; I can't say for that; I am far off from the mines.

Q. You have seen plenty of it down in some sections, of that country in North Georgia?

A. No sir, I have not.

Q. You never did see any smoke damage?

A. Yes sir, I saw it around Ducktown, back in around Ducktown there.

Q. Are you not a brick layer?

A. I am a brick-maker and layer, yes sir.

Q. I will ask you if you have not been working for the Ducktown Copper Company in that capacity, on in any capacity?

A. No sir; I never did work for but one company three days in my life, and that is called the T. C.

Q. You worked for the Tennessee Copper Company?

A. Yes sir, the other company, I never worked a day for it in my life. I was employed three days by the other company some ten or twelve years ago—three days.

Q. Now, as I understand you, all you state is if there is any damage done in that country, you have not seen it?

A. No sir, I never saw a bit last year or this year that I could tell anything about.

Q. How old are you, Mr. Bennett?

1526 A. I am about fifty-one or fifty-two years old, I guess; I don't know my exact age.

Redirect examination by Mr. MILLER:

Q. You worked for the Tennessee Copper Company three days about twelve years ago?

A. Yes sir, nearly twelve years ago.

And further deponent saith not.

T. M. BENNETT,
[SEAL.] By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 6th, 1914.

R. S. C. HUTCHINSON,
Commissioner.

Mileage, 260.

Next witness, I. S. DAVIS, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by Mr. MILLER:

Q. Where do you live, Mr. Davis?
A. I live out in Fannin County on Jacks River, as they call it.
Q. What is your post office?
A. Higdon's Store.
Q. Higdon's Store? How long have you lived on the Jacks River?
A. I have been there, I was raised there you might say, ever since I came there.
Q. And how old are you?
A. Oh, I am about thirty-four, along there.
Q. What business do you follow?
A. Oh, I farm, is what I try to make my living at, but I
1527 don't make it much; that is what I follow though.
Q. What kind of crops do you raise?
A. Well, I work—my crops are good this year.
Q. What crops do you grow?
A. Just corn and totatoes and such as that.
Q. Do you raise garden stuff?
A. Yes sir.
Q. Have you got any orchard?
A. Yes, I have got an orchard.
Q. And you have been living down there and farming practically all you- life?
A. Yes; well, I used to work at the saw mill a good bit ago a little bit; not much.
Q. What kind of crops do you say you crew this last year, this year, 1914?
A. I got good corn.
Q. Was any damage of consequence done down through that section of the country by smoke this last year?

Gen. DRAKE: We except to it as calling for a conclusion and not being in rebuttal.

A. If there was any damage I didn't see it.
Q. How far away from your home, that is, how many miles are

you acquainted with the country up and down the Jacks River, and the Jacks River Valley?

A. Oh, I have been over around up and down it.

Q. Several miles each was?

A. Yes.

Q. Do you have occasion to go through the fields of your neighbors and through the woodland?

A. I have been all around through the country there, as far as that is concerned.

Q. Do you know how corn and potatoes and the leaves on trees look when they are affected by copper smoke, have you been up about Copperhill and seen it?

1528 A. I have seen it about Copperhill.

Q. If there is any thing like that through you- section you could not find it?

A. No sir.

Gen. DRAKE: We except to that as leading and suggesting the answer.

Q. How about the crops down through your section last year, 1913?

A. Why they were common crops, nothing extra; they were better this year than common.

Cross-examination by General DRAKE:

Q. You say you lived on the Jacks River?

A. Yes sir.

Q. You live in behind the mountain then coming from your house to the copper companies don't you?

A. Well, you have to cross the little mountain, yes sir.

Q. You live in the valley on the other side?

A. It is not much of a valley; just up on the head of the river.

Q. You are down on the river you have seen plenty of copper smoke damage over on the side of the mountains when you get next to these copper companies, have you not?

A. Well, I have been about the mines there; I might have noticed the dead timber along.

Q. That is what I say, over on the side next to the Ducktown Copper Company, all in that section, there is plenty of dead timber and dead leaves, and was all this summer, wasn't there?

A. I haven't been out that way this summer to notice; I have passed out to Higdon's Store, that is as far as I have been out that way. I have been over there in the winter; but I can't tell.

Q. You haven't been over in that section when the leaves were on the trees so you could see where it burnt them?

1529 A. No sir, I have only been to Higdon's Store.

Q. You have seen some white pines killed up in there last year in those mountains around Harkness's and all in that section?

A. I haven't noticed any. I have seen a few dead trees about but a fellow will see them any how.

Q. You never saw any smoke damage, did you?
A. Yes, I have seen it a little bit; it looks like it has killed some timber about the mines there.
Q. Right at the mines; did you ever work for them?
A. I never worked for them.
Q. That is all you have seen is right at the mines where it killed the timber?
A. Yes; I haven't noticed none in our country.
Q. The truth of it is you don't know smoke damage, do you?
A. I think I do when I see it, but I ain't saw it.
Q. You haven't seen any of it?
A. Not in my country.
Q. Have you been over about Epworth this year?
A. I passed through there about a week ago.
Q. You never came through there this summer or last summer?
A. I don't recollect it if I did; I was there along in the fall after the leaves fell, going to Ducktown.
Q. You never came through there when the leaves were on?
A. I might a year or two ago, but I don't recollect how long it has been; I will not say I did; mostly when I was through there was when the leaves fell.
Q. You confined your travel through there when the leaves fell?
A. It was when I was going to the mines peddling; I passed through a time or two. I will not say it was a year or two;
1530 I recollect when I had mules up there in the summer time, it has been a year or two ago. This year, I don't recollect, I passed through there this summer. If I did, I don't recollect it, since before the leaves fell.
Q. You say you farm Mr. Davis?
A. Yes sir, that is the way I make my living now; I am trying to farm.
Q. You have better crops this year than usual?
A. Yes sir, we have had better corn than has been in a year or two, I think.
Q. How much corn did you plant?
A. I don't 'tend no big crops, just a small patch; just for me and my wife.
Q. How much?
A. Just a common crop; five or six acres may be more than that; just a small crop is all.
Q. You all had a mighty bad drouth down there this year didn't you?
A. It was tolerably dry but it didn't hurt us mountain people.
Q. The drouth didn't hurt you this year, because you made the best crops you have made, ever made, didn't you?
A. Yes sir; the corn is the best; that is lately.
Q. If there was a drouth the drouth wasn't sufficient to hurt you?
A. No sir, it didn't hurt us on level land.

Redirect examination by Mr. MILLER:

Q. What was it that you peddled up at Ducktown; you say you go up there to peddle occasionally?

A. Oh, I ain't peddled none in—It has been—I was over there a little about a year ago; I took some hogs and apples and potatoes and such as that.

1531 Q. When did you grown the apples and potatoes that you peddled up there?

A. Right where I live.

Q. Over on the Jacks River section?

A. Yes sir.

And further deponent saith not.

I. S. DAVIS,

[SEAL.] By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 6th, 1914.

R. S. C. HUTCHINSON,
Commissioner.

Mileage, 248.

Next witness, HAM HOLT, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by Mr. MILLER:

Q. How old are you?

A. Forty-three years old.

Q. Where do you live?

A. Blue Ridge, Georgia.

Q. What business do you follow?

A. I am a commercial man; a traveling man.

Q. What section *or* country do you travel through?

A. Pickens, Gilmer, Fannin, Union, Townsend, Counties in Georgia, Clay County, North Carolina and Polk County, Tennessee.

Q. One of those counties that you have named is in North Carolina and one in Tennessee, and the balance are all in Georgia?

A. Yes sir.

1532 Q. You travel, I believe, and sell to the trade along the railroads and in the country?

A. Yes sir, to the merchants through the country.

Q. You go out through the country?

A. Yes sir, regularly.

Q. How do you go through the country away from the railroads?

A. By a private conveyance, a buggy and horse; sometimes by automobile.

Q. Do you cover that North Georgia section, the counties adjacent to the Tennessee Copper Company's plant and the locality that is affect- by smoke pretty extensively or not?

A. No.

Q. Do you pass through the section of north Georgia that lies

south of the Tennessee line along in the vicinity where they claim smoke does damage?

A. Yes sir, regularly.

Q. How regularly do you make trips there?

A. Part of it once a month, and part of it twice; I am among the towns every week.

Q. What opportunities do you have as you would pass through that section for observing or knowing whether the smoke, what is know- as copper smoke would be doing any damage to the crops and timber and gardens?

A. Oh, I would see it, if it did any; sure I would.

Q. You would necessarily see it in your trips?

A. Sure.

Q. Well, now, tell us whether you have been in the vicinity of Epworth or Higdon's Store or Jacks River, any of those sections during this last season?

A. Well I go out by Epworth, right in sight of it, every Monday; I work Copper Hill every Monday. I generally drive in Copper Hill Sunday night and go to work on Monday; I go through Epworth once a month, and out as far as Packs some call it Hell's
1533 Hollow, and as far as Jacks River and back through by Chestnut Gap and back into Blue Ridge.

Q. Do you pass Higdon's Store?

A. Yes sir, once a month.

Q. You travel on the country roads as you make those trips?

A. Yes sir.

Q. Do those roads lead by fields and orchards and through woodlands also?

A. Yes sir.

Q. If the smoke would do any substantial damage through that section of the country, would you necessarily see and know about it.

A. Sure I would.

Gen. DRAKE: We except to that as being a conclusion.

Q. State whether or not there was any damage done by smoke through the Jacks River, Epworth or Higdon's Store Section during this last year?

A. You mean in 1914?

Q. Yes.

A. Well, on June 8th the Tennessee Copper Company blew a pipe, there was something that bursted and let the gas out on the 8th; I was in sight when it happened between ten and one o'clock, and I noticed it very closely. It didn't run up as far as around Epworth.

Mr. HILL: We except to that as being a conclusion, and as not being in rebuttal.

Q. You made some observations about that to see how far that smoke extended?

A. Yes sir; I drove on the public road and noticed it very closely.

Q. And that extended about how far from the plant of the Tennessee Copper Company?

A. Well, It was something like two and one half to three
1534 miles; not to exceed that.

Q. That was on what date?

A. On June 8th.

Q. How many days was it until they got that apparatus repaired so as to check the volume of smoke that was escaping?

A. That was the only — that I worked Copper Hill, on Monday. I understand they stopped it in a short time.

Mr. HILL: We except to that as being hearsay.

Q. And did you pass through that section thereafter from time to time?

A. Every Monday this year.

Q. Now, it is claimed, or has been maintained by somebody in this record, that from the first to the fifth of July this year, this last year, there was a great deal of smoke damage done through that section. Did you see any damage at that time?

A. No sir.

Mr. HILL: We except to the question as being leading, suggestive and calling for the answer desired.

A. (cont'd). I did not.

Q. If there had been any damage of consequence done in that section of country that lies southwardly and southeastwardly and southwestwardly from the Tennessee Copper Company's plant during that period, would you have known about it?

A. Yes sir.

Q. What sections of Gilmer County do you traverse, and how often—Gilmer Georgia.

A. In Gilmer County I always go out through what is called Deals, southeast and turn across into Gilmer County, southeast and come in about east of Ellijay.

Q. Near what mountains or water courses do you travel in Gilmer?

A. I go across the southeasterly part; I don't remember not in particular; it is a ledge of mountains all the way through.

1535 Q. Do you pass near any water courses in Gilmer County?

A. Cartecay River, I pass it once or twice.

Q. What direction do you travel from Ellijay in Gilmer County?

A. I go in there and travel south of the railroad, down through Gilmer and strike Pickens and Talking Rock.

Q. What character of crops have been grown through Gilmer County section this last year?

A. They are good, the best that have ever been raised in North Georgia during the year 1914.

Gen. DRAKE: We except to the answer and the question as not being in rebuttal.

Q. Was there any damage done by smoke through that section?
A. I have not seen any this year at all.

Cross-examination by General DRAKE:

Q. Mr. Holt, You are what is known as a drummer; is that your line of work?
A. Yes sir.
Q. What line do you carry?
A. Groceries, for the Hazen-Trent-Harrill Company of Knoxville, Tennessee; My headquarters is in Blue Ridge.
Q. That is your home, is it?
A. Yes sir.
Q. How long have you been in this employment?
A. Since 1914, this year.
Q. Just this year?
A. Yes sir.
Q. Copperhill is the Biggest town in your circuit, is it not?
A. Yes sir.
Q. And the biggest business in that town is groceries, is it not?
A. Well, I don't know; it is a good business town.
1536 Q. Outside of the Copper business the people who live there in that town, and the town, are dependent on this copper company for existance, are they not?
A. Not quite as much as on the farms outside.
Q. Don't you know that nine tenths of the people who live in Copperhill work for the Tennessee Copper Company?
A. Well, now, they live there when they work there, but the most of them live in North Georgia, seventy-five per cent of them.
Q. Don't you know they live there and work most of the time and go home occasionally?
A. Oh, well, it is public works; it is the only money place in that country—a place where they can make ready money to pay their taxes.
Q. Don't the people who work for those mines have to buy every thing on earth they eat from the grocery stores?
A. They buy that from wagons that come in there.
Q. And the grocery stores, they don't raise gardens there to amount to anything?
A. I have seen as fine gardens around there as grow in the state.
Q. Answer my question.
A. I am answering it. What is it you want me to answer?
Q. I asked you if practically all the people in Copperhill don't have to buy their vegetables?
A. No, not all of them.
Q. Answer the question; don't practically all of them?
A. I mean the working men; when a man works who has got land enough to make a crop.
Q. Don't you know there isn't one man in ten that gardens that has a garden in Copperhill?

A. That is because they haven't got the real estate.

Q. Answer my question, please, Mr. Holt.

A. They buy them, those that haven't got gardens to raise
1537 stuff on; they have to, of course, if they live.

Q. Is there one in twenty-five who live in Copperhill that has any garden whatever?

A. Every one who has a garden spot has got something.

Q. You know that is not answering my question, do you not, Mr. Holt?

A. I don't understand.

Q. I will ask you again.

A. Well, now, let's hear it.

Q. Is there one man in twenty-five in Copperhill who has got a garden?

A. I have never went around and check up them to see.

Q. Is there one man in ten who has got a garden in Copperhill?

A. Well, that is something I don't know; I never went around to see the garden spots; all I see is as I go traveling up and down there.

Q. You don't aim to answer my question.

A. I told you a minute ago that those that has not got gardens has got garden stuff to buy.

Q. Don't you sell nine-tenths of your stuff in Copperhill and Ducktown, Tennessee?

A. No sir; I have got a big trade all over my whole territory.

Q. Isn't the bulk of your trade in those towns?

A. No sir; Nelson, Georgia, Tate and Marble Hill are the biggest towns in my territory.

Q. The largest bulk of your trade sold in this smoke zone is in Copperhill, is it not, and Ducktown?

A. No sir, my work, honestly, is about equally divided; my record shown that.

Q. How is that?

A. I have no better trade in one place than in another; I sell them all.

1538 Q. Don't you know you sell ten times more groceries in Ducktown and Copperhill than in North Georgia?

A. I do because there are so many more concerns.

Q. Don't you know that the bulk of your trade is in those two places, in the smoke zone?

A. No, I can't answer you; I never figured it up to see how much I do sell there.

Q. Have you not just said you made that town every Monday, and you make these others only every month?

A. I make Nelson and Tate every Saturday.

Q. Don't you know Nelson and Tate are not in the smoke zone; don't you know they are fifty or sixty miles below Ducktown?

A. More or less.

Q. Answer the question first, and then explain.

A. I have got certain towns I have to make on certain days; I have got my days lined up.

Q. Answer my question; Ar-n't Tate and Nelson fifty to sixty miles or over from this copper country?

A. It is about forty-two miles, I believe to Nelson, and Tate.

Q. Don't you know that the reason you make Copperhill every week is that it is a favorable point from your standpoint as a drummer?

A. Why it is a good place for my groceries, but I have got my territory arranged which I go to on cetrain days, and if I didn't sell $50.00 worth I would go; I have got my days lined up for each part of my territory.

Q. And that is all the reason you base that on?

A. I have got it, as I say, lined up, every day in the week.

Q. Your answer is that the reason that you go to Copperhill and Ducktown every week, and the only reason is, because you
1539 have got your day set?

A. It is a good trade, and I have got my trade there, and I have certain days to go whether I sell a nickle's worth or not.

Q. You refuse to answer that the reason you go there is because its trade is more important there than in these little country towns in North Georgia?

A. I say the reason I have to work Ducktown is, I work back this way; I go through Ducktown Sunday night and drive to Hiawassee and work back this way, and drive back into Epworth and in home Monday night.

Q. How many customers have you got in Ducktown and Copperhill?

A. I sell to pretty nearly all of them.

Q. How many?

A. I can't tell; sometimes I go in and don't sell $2.00 worth, and sometimes I sell $15.00 or $20.00.

Q. Haven't you got intelligence enough to know how many customers you have, and what I mean by a customer?

A. Well, I perhaps sell, I will say fifteen customers there.

Q. In the two towns or the one town?

A. In the two. I don't try to sell them all.

Q. There is no other town in that smoke zone that has got as many as fifteen grocery stores, is there?

A. No sir. Every store carries groceries.

Q. In one town I am talking about?

A. Well, I guess they do; there are more people there.

Q. By "more" you mean that Ducktown and Copperhill have got more?

A. Yes, the population is greater. It is a manufacturing town; there are quite a lot of people there—not manufacturing, but they call it a mining town.

1540 Q. Now, you say once a month you go through Epworth, and from there on to Higdon's Store?

A. To Pierceville and down there.

Q. Down by Pierceville and up to Higdin's Store, and that section. Going through Pierceville and Higdon's through Epworth, what branches or creeks are you carried across?

A. Fightingtown Creek.

Q. There are two of those creeks, ar-n't there; Little Fightingtown and Big Fightingtown creeks?

A. I never did pay any attention to Big Fightingtown; the reason I pay so little attention to it is because it has got a rough ford.

Q. Don't you pass another ford?

A. I pass several branches but I don't know them now.

Q. Wasn't you through there this last week?

A. Yes sir.

Q. On what day?

A. I go through there once every month, I have this year.

Q. You don't know what day of the week in each month you go through that section?

A. No, I have no certain day; I have to catch it when the water courses are not up.

Q. You were through there during the month of August?

A. Yes sir.

Q. And you swear there was no smoke injury on that road anywhere?

A. If there was I didn't see it.

Q. And that is all; you don't say there wasn't?

A. There is so much agitation and excitement about it that I would likely have seen it.

Q. If a dozen or two or half a dozen good citizens of North Georgia swear that the timber was burnt badly all through there, you would be inclined to believe them, would you not?

1541 A. If I had seen it I would.

Q. You wouldn't believe it unless you saw it?

A. Oh, if they were men that I kn-w personally and swore it I would.

Q. If three Government experts that were entirely disinterested swore that section all along that road had nine trees out of ten that were burned with smoke, you wouldn't believe it?

A. I would believe it if they came and told me.

Q. But if they swore it would you believe them?

A. Yes sir.

Redirect examination by Mr. MILLER:

Q. That is, you would if you had not seen it and knew that it is not so?

Mr. HILL: We except to that as leading and suggestive?

A. How is that?

Q. If you had been there yourself and saw it, then you would not have believed it?

Mr. HILL: We except to that as leading, suggestive and calling for the answer desired.

A. I don't know what territory they were in. I mean on my territory I didn't see any.

Q. On the territory that you passed through, the conditions were not such as General Drake stated, that nine trees out of every ten were dead?

A. I didn't see any.

Mr. HILL: We except to that.

Q. Well, now, Mr. Holt, where do you make your home?

A. At Blue Ridge.

Q. You have lived there for how long?

A. Well, I have made it my home for sixteen years I was raised at Ellijay.

Q. Has the smoke done any damage this last season in the Ellijay section?

1542 A. None that I have seen. Do you mean in 1914?

Q. Yes sir.

A. None that I have seen.

Gen. DRAKE: We except to this as not being in rebuttal.

Q. Do you know a man named J. Y. Allen?

A. Yes sir, I ought to know him; he is my father-in-law.

Q. How close do you live to Mr. J. Y. Allen?

A. He lives with me; pretty close.

Q. You say you don't know how many people have places to raise gardens up in Copperhill and Ducktown, but those who do have places to raise gardens, do they raise gardens?

A. They sure do.

Q. And what kind of gardens are they?

A. They raise cabbage and beans and roasting-ears and pumpkins and tomatoes.

Q. Do they look to be in healthy condition and thrifty?

A. They are as fine this year as I stated a while *at* ago as I ever saw them.

Gen. DRAKE: We except to that answer as not being in rebuttal, and for the further reason that it is immaterial and incompetent, whether it injured any of Tennessee's crops, gardens, forests, etc.

Q. You sell groceries, I believe?

A. Yes sir.

Q. And you say you sell to a good many people in Copperhill?

A. Yes sir.

Q. You sell a good line of groceries and sell to a good line of people?

A. Yes sir.

And further deponent saith not.

HAM HOLT.

[SEAL.] By R. S. C. HUTCHINSON,
Commissioner.

1543 Sworn to before me this 6th day of November, 1914.
R. S. C. HUTCHINSON,
Commissioner.

Mileage, 260.

The further taking of depositions was here adjourned to 1:30 P. M. at which time same was resumed.

Next witness J. W. CLAYTON, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by Gen. FOWLER:

Q. Mr. Clayton, where do you live?
A. Well, my home is in Atlanta, has been for a number of years, but I have made my home for a few years at my orchard down here in Gilmer County; in fact I have had a home there for eleven years.
Q. Do you own a farm in Gilmer County, Georgia?
A. Yes sir.
Q. How far from Ellijay?
A. The way the land lies it is about five miles.
Q. In what direction?
A. Due east.
Q. How long have you owned that farm?
A. Eleven or twelve years; twelve years next February.
Q. How long have you resided on it?
A. Well, I have been on it at intervals ever since I have owned it, several times during the year until the last few years; I have been there constantly for the last three years; I have been there nearly all the time.
1544 Q. What kind of crops do you cultivate on that farm?
A. Fruit, apples and a little bit of farming otherwise, that is a little hay and corn, oats and peas.
Q. How many fruit trees have you upon the farm?
A. Well, approximately, I would say about four thousand.
Q. What kind of trees are they?
A. Well, they are apple trees and a few pears and a few peaches.
Q. Do you know where Mr. Northcutt's orchard is located?
A. Yes, sir.
Q. How far is it from your orchard?
A. Mr. Northcutt's orchard I suppose is a mile and a half away.
Q. In what direction?
A. Right west, or perhaps a little over; a mile and a half.
Q. You know where Mr. Arnold's orchard is located?
A. Yes sir.
Q. Where is that with reference to your orchard?
A. It is the same only his lies on the north of Northcutt's.
Q. Are there any other orchards in that vicinity except yours and Mr. Northcutt's and Mr. Arnold's?
A. Yes sir; there are a good many little orchards; these are the only commercial orchards that I know of.

Q. Who has the largest orchard in there?
A. I suppose Mr. Arnold's is the largest one; either his or Mr. Northcutt's is the largest in the country.
Q. How old is your orchard?
A. Eleven years old, that is the part that I set out. There were some two or three hundred trees there that were on the place when I got it; the ages range from twelve or thirteen years to probably fifty or sixty.
Q. Have you given special attention to your orchard during the present season?
1545 A. Yes sir.
Q. State whether or not your orchard has been damaged during this season of 1914 by smoke fumes?
A. Well I couldn't say that it has been damaged; I haven't seen anything that I could attribute to the smoke in the way of damage; in fact I have seen no damage that I know of.
Q. What kind of a crop have you had this year?
A. I had corn, peas, and *cain*; peas and *cain* for hay, and corn, and I had a little garden stuff and oats, I had oats in the spring.
Q. Have your vegetation of the kind you have mentioned been injured by smoke fumes?
A. Not that I could tell; not that I could see.

Gen. DRAKE: I except to the question and answer as original evidence and not in rebuttal.

Q. What character of a fruit crop have you had during the present season?
A. What character of fruit?
Q. Have you had an average fruit crop or better or worse; what is the kind of a fruit crop that you have had?
A. I have had a better crop this year than usual.

Gen. DRAKE: I except to the question and answer as being original evidence and not in rebuttal of any thing proved by the State in his case.

Q. Have your crop of apples been damaged in any way, if so from what cause?

Gen. DRAKE: I except to that as irrelevant, and not being in rebuttal.
A. If it has been damaged at all, I don't call it—except, of course, there are some diseases that have injured it some, that we have not controlled entirely with our spraying.
Q. Mr. Clayton, state whether or not you have made a
1546 special study of the diseases of fruit trees?
A. Well, off and on, yes sir, a pretty close study of it.
Q. Have you read literature on the subject?
A. Yes sir.
Q. To what extent have you studied the subject?
A. Sir?
Q. To what extent have you studied the subject?

A. Well, I have studied—I have read constantly the bulletins from the experiment stations written by the leading horticulturists of the country, the Government Bulletins, and the special bulletins, not only of the state but of other states, issued by the experiment stations.

Q. And while reading literature upon the subject, have you also observed your own orchards?

A. Yes sir.

Q. And experimented with your own trees?

A. Yes sir; I have been spraying them for three or four years. I commenced in a small way at first, and have increased it from time to time until now I spray thoroughly.

Q. State whether or not, Mr. Clayton, you have examined during the present year Mr. Northcutt's orchard?

A. I was in a portion of it.

Q. When was that?

A. Well, I cannot give you the exact date, but I think it was about four or five weeks ago.

Q. Have you or not examined Mr. Arnold's orchard?

A. Yes sir I was there at the same time.

Q. Who were with you when you made those examinations?

A. Well, my brother Mans. Clayton was with me; he is the only one *one* who was with me.

Q. At whose instance was it that you went to the orchards and examined them?

A. Well, I was asked or requested to go; my brother asked me to go, at the request, I suppose, of some of your people may
1547 be Mr. Reese here; I am not sure.

Q. State whether or not you observed a portion of those orchards with care?

A. I did, part of them, yes, where I went to examine; I examined them pretty close.

Q. Did you see any thing wrong with the trees in those orchards; if so, please state what it was?

A. Well, the worst thing that I saw I think was the lack of cultivation.

Q. In what condition were the trees?

A. Arnold's orchard do you speak of?

Q. I am talking of Mr. Northcutt's orchard; in what condition was it?

A. His was in a pretty bad condition; I didn't see any of it but what is in a pretty bad condition, what I saw of it; I didn't see very much of it.

Q. Were the trees affected in any way by any disease?

A. Yes, I think they had a considerable amount of leaf-spot or frog-eye as it is called by horticulturists.

Q. I wish you would describe just what kind of a disease that is, and what its effect upon the tree is?

A. It is a disease that attacks the foliage it is a parasite; and it commences by causing little specks on the foliage; there is an invisible parasite there that seems to kill the leaf where it touches

and it spreads and they become numerous on the leaves and finally the leaf will turn yellow and drop off.

Q. Does it effect the entire tree?

A. Yes sir, it usually gets all over the tree, and the foliage will finally fall off where it gets very severe. It wasn't, up there, so severe as that, in Mr. Northcutt's orchard it wasn't enough there to make it shed the foliage, not much of——

1548 Q. Was there full foliage on the trees when you were there?

A. I think there was pretty full foliage what I saw of it.

Q. Did you notice that disease was present in the orchard?

A. Yes sir.

Q. To what extent was it present?

A. It wasn't very bad.

Q. Does that disease have any effect on the fruit?

A. Yes sir, it has the same effect on the fruit as on the leaves or more so.

Q. Does it speck the fruit?

A. No, but the fruit won't mature and it won't color, and it don't reach—it never reaches that state of ripeness or maturity to give it that flavor that fruit ought to have.

Q. Are you speaking about that both from your experience and also from your knowledge acquired by reading upon the subject?

A. Both; I have read it that way and I have found it so by experience.

Q. Have you had that disease in your orchard?

A. Yes sir I have had it pretty bad.

Q. Does that disease kill the trees?

A. I have never seen any tree die from it, but I have seen them almost stripped of their foliage, and the fruit will fall off before it matures.

Q. Did you find that disease present in Arnold's orchard?

A. Yes sir.

Q. To what extent was it present in his orchard?

A. It wasn't very bad; it wasn't bad; it was only in places. Failure to cultivate increases this disease. It developes more rapidly where the trees are not cultivatd.

Q. Was it as bad in Arnold's orchard as in Northcutt's?

A. Well, I couldn't say as to that; I don't remember.

1549 Q. How had Northcutt's and Arnold's orchard been cultivated?

A. Very poorly; they didn't look as if they had been cultivated at all this season, but I suppose they had been cultivated earlier in the season; anyway they said so; but they were grown up in heavy weeds waist-high and as high as my head.

Q. Did or not the trees give evidence that they had not been well cultivated?

A. They certainly did.

Q. What other kind of disease, if any, did you find in Northcutt's and Arnold's orchards besides the one about which you have just spoken?

A. I saw some scale; I didn't see any diseases very bad, that is,

I did not notice any that were effecting the trees or the fruit very seriously except for the lack of cultivation more than any thing else, and in places where the soil was very poor and neglected the trees showed signs of—I didn't see any signs of disease but then of course, I didn't see any signs of thrift, and the foliage was looking bad on them.

Q. You speak of "scales;" what do you mean by that?

A. The San Jose scales.

Q. What kind of a disease is the San Jose scale?

A. It not a disease; it is an insect; it is an insect on the branches, the limbs; it is not a disease at all, as I would call it; it is an insect, a little insect that you can see with the natural eye without the aid of a microscope.

Q. State whether or not they will kill a tree?

A. They certainly will.

Q. How long does it take the San Jose scale to kill a tree?

A. About two years.

Q. Did you see that disease in either one of those orchards?

1550 A. Not bad; no sir; I saw it some.

Q. Did you see it to some extent?

A. Yes sir, I saw some.

Q. Did you see some in both orchards?

A. Well, I did not examine the Northcutt orchard enough to nitice it; I don't remember really; I don't hardly think I noticed it in the Northcutt orchard, I didn't go clear into it.

Q. Did you notice any other diseases beside the Spot and Scale in either of the orchards?

A. Yes, I saw fing-us diseases on the fruit.

Q. What is the nature of those diseases, and what was the appearance of the fruit?

A. Well, the specks—there were specks in the fruit; decayed specks; rotten specks; and there were two or three kinds of fung-us disease. I saw Black Rot I believe and the Bitter Rot—those two fung-us diseases—and I saw also a kind of a sooty fungus, and I think I saw some Blotch, that injures the apple and prevents it from developing, the Blotch does.

Q. To what extent were the orchards effected by these fung-us diseases?

A. Well, I wouldn't say very badly affected by those diseases.

Q. State whether or not you saw any evidence what ever in either of those orchards of an injury from smoke fumes this year?

A. I couldn't say I did. I don't know—I am not familiar with smoke damages but I didn't see anything unusual any more than what I could account for from other causes.

Q. State whether or not you have some diseases more or less in your own orchard?

A. Yes sir, I have some in my own orchards about the same thing; these orchards reminded me very much of a part of my orchard, about three acres that I have that I don't cultivate nor fertil-

1551 ize nor spray, and it looked just like that.

Gen. DRAKE: I except to all that evidence as being irrelevant, the comparison with his orchard as being irrelevant.

A. (Cont'd.) That is, I did cultivate it myself but not enough, not near enough and spray them enough, and prune them and in fact fertilize them enough; that is the way I want to put my answer to that proposition.

Q. Have you ever won any prizes on apples?

A. Yes sir.

Q. When?

A. Last year; last fall, November.

Gen. DRAKE: I except to that as being irrelevant, immaterial and not rebuttal. It could in no ways reflect any light on the issues in this case as to who won any prize or did not.

Q. Was that in 1913?

A. Yes sir.

Q. Where did you produce those apples?

A. On that farm, in those orchards there that I have been speaking of.

Q. What kind of apples were they?

A. Well, I had different varieties. You mean the names of the varieties?

Q. Yes.

A. I had six varieties including Limbertwigs, Sharpley, Yates, Stump the World, Kennards Choice and King David; I won four first and two second prizes.

Q. Where were those apples exhibited?

A. At the New York State College of Agriculture at Utica, Cornell University.

Q. Over what territory did the contest extend?

A. The United States. I had information from the faculty or the manager of the fair or of the show, rather, of the Agri-
1552 cultural Department, that there were apples there from apple-growing sections in the United States, and there were 130 different varities in the competition.

Q. How many first premiums did you take?

A. Four first and two second.

Gen. DRAKE: We except to all that as being incompetent and not in rebuttal and irrelevant.

Q. Mr. Clayton, have you observed the forests in your section of the country for the purpose of determining whether or not there has been any smoke injury there during the present season?

A. Well, to some extent I have around my place there.

Q. Has there been any?

A. Not that I can see. I saw nothing the matter with the foliage on the timber.

Q. You haven't been up on the Turnip Town Mountain?

A. No. I was across to the Arnold orchard through the forest from my place, a distance of a mile and a half.

Q. In going through the forest to Arnold's orchard, did you observe the forest to see whether or not there had been any injuries?

A. Yes, sir, I noticed to see.

Q. Did you detect any?

A. I did not, unless it was, I saw some trees—occasionally I would see a tree, just as you would in going through the woods, with the foliage on the under sides that seemed to be dying a little early for the season.

Q. What do you mean by the under side?

A. The under limbs, the under branches, there seemed to be dying.

Q. Did you or not have considerable drouth through your section?

A. Yes, sir, we did in the spring. I didn't see very
1553 much of that.

Q. State whether or not those leaves about which you speak were the least exposed leaves on the tree, those that were underneath?

A. Yes, they were the least exposed.

Q. Did you observe any other section of your vicinity there other than the one you have mentioned with reference to injuries to the trees?

A. No, sir. Did I observe—Did I notice it, do you mean?

Q. Yes?

A. Yes, I noticed on the road from my place to Ellijay.

Q. Did you see any indications of any disease through that section?

A. I did not, not any thing unusual.

Q. Have you noticed the crops in that same vicinity?

A. Yes, sir.

Q. This season?

A. I have noticed the crops too.

Q. Have you seen any evidence of any smoke injury to any of the growing crops?

A. I have not; I have seen nothing the matter with the crops.

Q. What kind of crops have they raised this year through that section?

A. Very good crops; very good crops. You mean, whether they were good or bad or fair?

Q. Yes, sir.

A. Yes, sir; they were good crops.

Q. How did they compare with other years?

A. It was about the average, I think.

Q. And you have known that section for how long?

A. Ever since I was born.

1554 Q. Were you raised up in that section of the country?

A. Yes, I was raised there but I lived away from there for ten years, and previous to that time I was away for quite a number of years.

Q. Mr. Clayton, were you present when any photographs were taken near that place, your place, or in that vicinity?

A. Yes, sir.

Q. Do you remember who it was that took those photographs?
A. Why, yes, sir; Mr. Thompson.
Q. Was Mr. Reese present?
A. Mr. Reese was present.
Q. Do you think you would recognize any of the localities photographed if you were shown the pictures?
A. I think so.
Q. I show you a photograph which is number 65, dated September 8th, 1914, James E. Thompson, Photographer; state if you recognize that locality, and if so, please state where it was taken?
A. Yes, sir, I recognize it.
Q. Where was it taken?
A. Right at my barn, right above, on my place.
Q. Are those your apple-trees that are shown there?
A. Yes, sir.
Q. And is that your corn patch?
A. Yes, sir.

Gen. DRAKE: I except to that evidence and photograph because it is not in rebuttal: there was nothing taken by the State in regard to this orchard of Mr. Clayton, and for that reason it is incompetent.

Q. I show you photograph number 66 of the same date; do you recognize that place; if so, state where it is?
A. Yes, sir, I recognize it.
Q. What is it a picture of?
1555 A. It is a picture of the orchard and apples more especially of one tree there.
Q. Is there any trouble with the tree?
A. No, there is nothing wrong with the tree.

Gen. DRAKE: I except to that photograph and the answers to the questions, for the reason that it is not in rebuttal, State of Georgia took no evidence relative to the witness's orchard.

Q. I show you photograph number 67 of the same date, Mr. Clayton. Do you recognize that picture? Do you recognize what that is a picture of; if so, please state what it is and where it is?
A. Yes, sir, I recognize that. That is in my orchard right above the last picture.

Gen. DRAKE: We except to that photograph for the reason stated in objection last above.

Q. I show you photograph number 68, the same date. See if you recognize the place of that photograph and state what it is?
A. Yes, sir, I recognize that; it is a Ben Davis Apple tree in my orchard.

Gen. DRAKE: We except to that photograph for the same reason stated above.

Q. I show you photograph number 69 of the same date; please state of what that is a photograph?
A. That is a picture of a Ben Davis apple tree in my orchard.

Gen. DRAKE: We except to that for the same reason stated above.

Q. I show you photograph number 70, of the same date; state of what that is a picture?
A. Well, I recognize that picture; it is a general view of one of the orchards.
1556 Q. One of your orchards?
A. One of my orchards looking north from my residence.

Gen. DRAKE: We except to that because it is not in rebuttal the State of Georgia took no proof in regard to this witness's orchards.

Q. I show you photograph number 71, please state of what that is a photograph?
A. That is a picture of the orchard looking west.
Q. Do you mean of your orchard?
A. One of my orchards.

Gen. DRAKE: We except to the last question and answer for the same reason stated above.

Q. State whether or not, Mr. Clayton, those pictures are a correct representation of the condition of those trees and orchard at the time they were taken?
A. Yes, sir, they are a fair representation.

Cross-examination by Gen. DRAKE:

Q. Mr. Clayton, are you an expert on diseases *to* trees?
A. I do not claim to be.
Q. Are you a botanist?
A. No, sir.
Q. Are you an entomologist?
A. No, sir.
Q. Or any of those related sciences; have you ever studied them or graduated from any school on them?
A. No, sir. I have studied ever since I have been in this orchard, since I have been developing and growing this orchard only.
Q. What kind of disease is that frog-eye on apples; what causes it?
A. I can't tell you.
Q. You don't know anything about the history of that disease, do you?
1557 A. No; I never studied the history of it; I have studied the effects.
Q. That is all you know. You don't know it to be a fact that if smoke was to come down and damage an orchard, or any other like cause it would cause Frog-eye to set up in it, do you?
A. I don't believe it would.
Q. You don't know whether it would or not do you, if you don't know what the disease is?
A. Yes, I think I know it would not.

Q. How is that?

A. I think I know it would not.

Q. If you don't know what Frog-eye is, how do you know that smoke coming on it won't cause it?

A. Well, most any body ought to know that, I think.

Q. I don't want that answer; I want to know why most any body would know it?

A. I don't claim to know the scientific parts of these things; I only know from experience and from reading after hort-culturists and applying the remedies that they prescribe.

Q. You are no expert on smoke injury, are you, either, Mr. Clayton?

A. No, sir.

Q. You have never studied it have you?

A. No, sir, I haven't seen enough of it to know.

Q. You don't know the various effects that sulphur smoke might have on vegetation of different kinds, do you?

A. No, sir.

Q. If it has one effect on one kind of plant growth, and a different kind of effect on another kind of plant growth, you don't know that, do you?

A. No; I have never seen it to know it, except as I came along on the train the other day.

1558 Q. What color are these spots that you call Frog-eye?

A. They are brown at first, or yellow, rather; well it is just the color of an apple-tree leaf when it is dead.

Q. Well, now, Mr. Clayton, if experts, who have made a life study of those things, should say that Frog-eye does not hurt fruit, affect the crop of fruit, then you would conclude it was not frog-eye that orchard had, would you not?

A. No, sir, I would not.

Q. If all the authorities in the world should say that Frog-eye does not hurt fruit, would you still say that it was Frog-eye and that it did hurt this fruit?

A. Well, I might decide—put the question again.

Q. Would you still stick to it that that was Frog-eye, when you say it did injure that fruit up there?

A. It is what they call Frog-eye, I would say.

Q. Would you still say it was Frog-eye if the recognized authorities of the world have said or should say that Frog-eye does not hurt fruit?

A. Well, if that *id* Frog-eye I would say that it does hurt it, if what they call Frog-eye there is Frog-eye or leaf spot in the Agricultural literature.

Q. You don't know what it is from your own knowledge, do you?

A. No, just from what I read and from what I see.

Q. You don't know enough about the history of this disease to go into an orchard and make a microscopical examination of it and say from a scientific standpoint that that is Frog-eye, do you?

A. Not from a scientific standpoint, no.

Q. All you know about it is from just casual observation; you know that the leaf turns brown?

A. Yes, and from plates that the experiment stations make—illustrations.

1559 Q. I believe you said you didn't know the cause of Frog-eye?

A. I have never studied it that far back to know how it originated, no.

Q. Is it an insect?

A. It is said to be a parasite.

Q. It is said to be a parasite?

A. Yes, sir.

Q. Is that an insect?

A. It must be; it is a species of an insect, I suppose.

Q. I could be a parasitic insect, and very often is, is it not?

A. It may be, I don't know. Well, it might be; I don't know the distinction between a parasite and insect scarcely.

Q. You don't know how to distinguish between a parasite and an insect?

A. Well, hardly. I don't know that I could tell exactly.

Q. Mr. Clayton, your orchards are located right behind, a big mountain from the Ducktown and Tennessee Copper Company's plants, are they not?

A. Yes, sir.

Q. And these other orchards we have been speaking about are more exposed?

A. I suppose so; yes.

Q. I will ask you if it is not a fact that you have the best orchard in that whole country?

A. I don't know that I have.

Q. I mean best from the standpoint of being in a good condition and protected by the mountains, and all those things, by Nature?

A. Well, I don't know whether protection has anything to do with it; I think I have cultivated it more than others do.

Q. Your orchard fronts south, does it not?

A. Yes, sir.

1560 Q. Arnold's orchard and the Northcutt orchard from north?

A. North and west, I believe.

Q. When was it that you made this inspection of the Arnold and the Northcutt orchards that you have testified about?

A. It was about the time or soon after the date that those photographs were taken.

Q. I want to know as nearly as you can, the month, or about what part of the month?

A. Well, it must have been four weeks ago about this time, about this time last month, as well as I remember; I don't know.

Q. About four weeks ago?

A. Yes, and may be longer, and may be not quite so long.

Q. Well, now Mr. Clayton, if you should see the smoke down there in the Arnold orchard, almost like the leaves were afire from

appearances, boiling up through those trees and settling around there in the coves, and there wasn't any woods afire and you could smell the sulphuric acid, and you could see it and it settled there and stayed there a day and probably a little over a day, and then in a day or two after that that the leaves of that orchard should cripm up on the edges and nearly all the apples fall at once, or in a few days, would you say that it was Frog-eye caused that or smoke, from your knowledge, now, of fruit?

A. Well, I have seen the smoke over on our side.

Q. Please answer the question first, Mr. Clayton?

A. I don't know what I would say until I saw it; I would have to see it to determine.

Q. If you were to see such a condition as I have just described, to what would you attribute the effects?

A. Well, I might attribute it to the smoke.

Q. Mr. Clayton, the brown leaves you saw on the forest that you talked about awhile ago, you don't know what caused them, do you?

1561 A. I thought we were getting towards to latter part of the season, and some trees shed their foliage and some turn brown earlier than others.

Q. The time then you have been talking about if after the leaves commence to turn brown in the Fall?

A. Yes, they were slightly turning then.

Q. Don't you know from you- experience that the leaves on the top of a tree show the effects of frost or Fall shade and come down, coming down to the ground from the top?

A. No, I don't know that.

Q. Isn't that a fact?

A I don't know it.

Q. Did you never observe it in your experience?

A. I don't know that I ever noticed which part of a tree begins to shed the foliage first, the top or the lower leaves; I never took any notice to that.

Q. How old are you?

A. Fifty odd.

Q. You have been in the forest country all of your life?

A. A great deal, yes sir.

Q. And you have never observed the effects of shedding of leaves in the Fall?

A. I never paid any attention.

Q. How they commence?

A. No sir, I never noticed that, that I know of.

Q. The time these pictures of your orchard were made, that you have just testified to, they were made by Mr. Sherman Reese, who is the employee of the Ducktown Copper Company?

A. Yes sir.

Q. He was with you?

A. Yes sir.

Q. And the gentleman who is here assisting in arranging

1562 the photographs in this case?

A. Yes sir.

Redirect examination by Gen. FOWLER:

Q. Mr. Clayton, in what direction are Northcutt's and Arnold's orchards from yours, probably?

A. The Arnold orchard I think is half a mile north of due west, and the Northcutt orchard is about west.

Q. Are you in plain view of Turniptown Mountain at your home?

A. No sir.

Q. When you go to Ellijay are you in view of it?

A. I don't know as I know exactly where the Turniptown Mountain is.

Q. Do you know the location of the Flathead Mountain?

A. No sir.

Q. Or of Bush Head Mountain?

A. No sir, I never go out in those Mountains.

Q. You don't know those things?

A. No sir.

Q. You know Cartecay Valley?

A. Yes sir.

Q. And Ellijay Valley?

A. Yes sir.

Q. Have you seen any smoke in there this year?

A Smoke or smoke damage?

Q. How ofter have you seen any smoke in Cartwcay Valley this year?

A. Why I have seen it—I saw it one time, that I remember, I saw smoke down there settle right on the south side of the mountain, right back of my orchard. The smoke settles when it comes over that way. It always comes there.

Q. You saw it once?

A. Yes, I saw it once.

Q. Did you see any damage from it?

1563 A. No, sir.

Recross-examination by Gen. DRAKE:

Q. Did you smell that smoke when it was down there?

A. No; some of them can say they smelt it, but I never got able to smell it.

And further deponent saith not.

J. W. CLAYTON,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 6th, 1914.

[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 280.

Next witness GRANT ORTEN, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by Mr. MILLER:

Q. Mr. Orten, where do you live, in what part of North Georgia?
A. I live in the Northern part of Georgia, I live in Morganton.
Q. In Morganton?
A. Yes sir; I live a mile and a quarter beyond Morganton.
Q. In what county?
A. In Fannin County.
Q. How long have you lived there?
A. I have lived there, I have been there a year last February.
Q. What business are you engaged in?
A. I am trying to farm there.
1564 Q. State whether or not the smoke or fumes from the Ducktown Company section have done any damage in your section during this year.
A. If they have I have never noticed it.
Q. What kind of crops have those people grown down there, as to whether they are good or bad?
A. The crops are the best I have ever seen on the Creek.
Q. The best you have seen?
A. Yes sir, the best I have seen.
Q. On what creek?
A. On Star Creek.

Gen. DRAKE: We except to that as not being in rebuttal of any thing the State introduced.

Q. Are those the best you have ever seen there; how good have you seen them; how much do the people grow of corn to the acre?
A. The most I have ever seen to the Acre, I helped to measure it last year was G. C. Byington's crop, 136 bushels and 52 pounds, is the most, I have ever seen on the creek. Crops averaged better this year at other places than they did there, but he fertilized heavier this year than anybody else has.
Q. Do you say the crops on the whole are better than you have ever seen them?
A. Yes sir.
Q. Does that refer to all kinds of crops, corn and——
A. Well, crops are better except the Byington crop last year; he is not on the Creek.
Q. No. I understand.
A. Well, all crops; yes sir, all kinds of crops.

Gen. DRAKE: I except to all of that evidence about the acre of corn, because that was proven about twenty-five times in the original taking of this evidence, and same is not in rebuttal.

Q. Now, how large a scope of country are you acquainted with there, Mr. Orten, through the Morganton and Star Creek
1565 section; how many miles around you in every direction are you acquainted with, would you say?

A. Well, I have been pretty close there; I went in on the old Byington place, and I have been there pretty close all the while. I have ranged cattle in there for some two or three miles from my place.

Q. Throught what timber?

A. Through the timber on Star Creek, back in betwixt Star Creek and Wilscot Creek.

Q. What is the nearest mountain around there?

A. The Richard Mountain is counted to be the nearest mountain.

Q. You are acquainted, then, up and down Star Creek?

A. Well, not clear down; I haven't been clear down the Creek this season; I have been on the road betwixt there and Blue Ridge.

Q. And how are your neighbors' crops and woodlands and fields this year?

A. They seem to be al- right; there has not been any damage that I have seen.

Gen. DRAKE: We except to all this evidence because not in rebuttal of anything proven by the State of Georgia.

Mr. MILLER: If the State of Georgia don't claim there was any damage done at Morganton or on Star Creek, I am ready to turn the witness over to you.

Cross-examination by Gen. DRAKE:

Q. You are a land-owner down there, Mr. Orten?

A. Yes sir.

Q. You live behind a great big hill or mountain from Ducktown don't you; you live over on the east side of that mountain that runs across there at Star Creek?

A. No sir, there is no mountain there.

Q. There is a big hill.

1566 A. None to amount to anything, no sir; it is right upstream all the way. I live on the Creek that runs up from the river that runs right direct from Ducktown. I live on the creek that runs into the river that runs direct up from Ducktown.

Q. Which way do you live from there?

A. From Ducktown?

Q. Yes.

A. Why, I live a southeast direction.

Q. Which way do you live from Blue Ridge?

A. From Blue Ridge, it is—Let's see. A little over seven miles.

Q. Don't you know running from that river way down there north of Blue Ridge, clear on down south of Blue Ridge, just east of Blue Ridge, there is a great big hill or mountain that intervenes between there and Morganton and that section?

A. No sir.

Q. And going up from Blue Ridge, don't you know—or, going up from the railroad anywhere north of Blue Ridge, going east, that you have to climb a big hill to get into that section?

A. There is nothing I consider a big hill on the route there.

Q. Would you call a five or six hundred feet high hill, a big hill?

A. Yes sir.

Q. Don't you know, in climbing out of Blue Ridge, going east, that you have to climb a hill that is five or six hundred feet high, when you start out of there?

A. No sir.

Q. Don't you know that Blue Ridge is right at the top of the Gap of the Mountains?

A. At the top of that Mountain?

1567 Q. Don't you know that Blue Ridge is right in the Gap of those mountains, and right at the top of the gap where it breaks off both ways?

A. I understand, yes sir.

Q. Are those not the facts?

A. Yes sir; Blue Ridge seems to be right at the top of the mountain.

Q. Isn't it right in the gap of the mountains?

A. I understand; yes sir, the town.

Q. Is it not?

A. The town; yes sir.

Q. If it is in the gap of the mountains, is there not a mountain on each side of it?

A. Yes sir.

Q. Please explain how you would go out of that gap east without going up a hill?

A. When you go in the mountains, you have to go down to get to a stream; you are bound to go down to get to some stream is the way I look at it. In the top of the mountain or the gap of the mountain, you are bound to go down to get to the stream. I am on the stream.

Q. Isn't that very mountain that you were speaking about between you and Ducktown, Tennessee?

A. No sir, it is not between me and Ducktown. It is back on the far side of the river from Blue Ridge. The gap of the mountain is on the far side from me. I am on the east side of the river, and Blue Ridge is on the west side. There is the difference.

Q. You have seen a lot of smoke over in there, have you not?

A. I have seen some smoke.

Q. Have you not smelt some smoke over there?

A. No sir, I have not smelt any since I have been on Star Creek.

1568 Q. How long have you been there?

A. I have made two crops there. I moved there last February was a year ago.

Q. Where did you live before you went over there?

A. I lived on the Toccoa River.

Q. Which way from this place?

Q. It was a south direction, about three miles from where I now live.

Q. Were you raised in there?

A. Yes sir, I was raised on Wilscot River. I lived there when I was first married.

Q. You had a bad drouth up there this year, did you not?

A. Yes sir, it was reasonable dry.

Q. Last year you had the best crops you ever had in the world?

A. No sir, we had better crops this year than we had last year.

Q. And yet last year was the year that that fellow raised 136 bushels and 52 pounds of corn to an acre?

A. Yes sir.

Q. And that was a bad crop year, to boot?

A. It seemed to be, from appearances. It seemed to be a worse crop year than this year.

Q. Then a drouth seems to be good for crops in that country?

A. No sir. I believe if Byington had had it in there this year, he would have made more corn, because crops are better, but Byington claims he got over there from the smoke or he would have done worse, and he was going to move nearer the next time; that is what he claimed to me.

Q. And you conclude that smoke is good for crops?

A. No sir; I think he was joking about that.

Q. You have never seen any smoke injury at all up in there, have you?

A. Not since away back, I will say it has been some seven
1569 or eight years; I don't remember just exactly the time.

Q. It has been seven or eight years since you saw any smoke injury?

A. Since I noticed any damage, or had any damage done myself. I thought probably the smoke did some damage on a watermelon patch, and went in another one——

Q. This year you have seen some smoke in there?

A. There has never been a time since I have been a child but what I have seen smoke in there during the year, some time during the year, some smoke.

Q. And this year you have seen it, too?

A. Yes sir, I have seen it this year, but I can't tell that it is any worse, or may be hardly as bad.

Q. You have seen it there?

A. It has been more of a dry season, and, generally of a dry season, when we don't have much fog and stuff like that, the smoke would be generally higher, and it has been a little bit—it seems to have been a little bit off, more so than common.

Q. It was better in your neighborhood this year that usual?

A. It has seemed to be.

Q. On account of the dry weather you say?

A. That was my opinion about it, on account of the dry weather?

Gen. FOWLER: Where does this smoke come from?

The WITNESS: I can't tell.

Gen. DRAKE: Get in the record that it rises in dry weather and has generally been high, usually, too; that he has observed that.

Redirect examination by Gen. FOWLER:

Q. How old did you say you were?
A. I am forty-six, I reckon, I was born September 25, 1868.
Q. And you have seen more or less smoke every year since
1570 you have been born?
A. Yes, sir.
Q. You see smoke coming out of the brick chimney of that residence across the street there, when you look at it?
A. Yes sir.

Recross-examination by Gen. DRAKE:

Q. Do — mean to compare the smoke that you see here with the smoke you saw boiling over in your country, and that you saw all over your water-melons at that time?
A. Well, I can't tell you about that. All smoke seems to b-alike. I have never been able to detect the difference in smoke.
Q. You will not qualify then as an expert on smoke, will you?
A. No sir, I couldn't at all; I am no expert on smoke that way, not enough to tell the difference.

Redirect examination by Gen. FOWLER:

Q. Do you know when crops are affected?
A. Yes sir.

And further deponent saith not.

GRANT ORTEN,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 6th, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 260.

Next witness, T. E. GARREN, called for defendants, in rebuttal, being duly sworn, deposed as follows:

Examined by Mr. MILLER:

1571 Q. Where do you live?
A. I live in the Morganton district, in Fannin County.
Q. In Georgia?
A. Yes sir.
Q. How long have you lived in the Morganton section?
A. I moved up there just about the first of the year, this year.
Q. What business are you engaged in?
A. Farming.
Q. I want to ask you with reference to what is know- as the Dora, the mineral bluff, the Start Creek, Morganton and Mineral Bluff sections of Georgia, in so far as you are acquainted with

them. Tell me which of those localities or whether you are acquain-ed with all of them, and if not, which of them?

A. I am acquainted with all of them.

Q. I want you to tell us now about the condition of the crops, the orchards, the fields, and the forests out there in those various sections of Georgia this year?

A. Well sir, as far as I know, the corn crops are all good; pea crops and bean crops are good, too.

Q. If there had been any substantial damage done down there by copper smoke this year, affecting crops or fields or forests, would you have know- about it in passing through the country?

A. Not that I know of. I have not seen a thing that I thought was damaged by smoke.

Q. If there had been any damage of consequence done there, would you have seen it?

A. I think I would, yes sir; I think I would.

Gen. DRAKE: We except to the question, because the question suggests the answer.

Q. What opportunities have you had for seeing and knowing about it?

A. Well, sir, I have been right there farming in the smoke
1572 for eight years.

Q. And have you or not seen in your neighbors' lands and their fields and through their woodlands?

A. Yes sir.

Q. How many miles away from your home have you been?

A. I have been out eight or nine miles up the river.

Q. What river?

A. The Ocoee; The Toccoa, they call it up there; it is called the Ocoee down here; and then I was *was* from Start Creek where I lived across Hampton and over into the heavy cut cane, over there by Dora Post Office.

Q. Now, what is that Hamp Top or Hamptown?

A. Hampton.

Q. What is that, a village?

A. It is a creek, a valley.

Q. What mountains through that section are you acquainted with?

A. Well, it is that bound-ry, I can't tell you what the names of the mountains are, nothing more than just Hampton Creek has a valley and Cut Cane and Star Creek—just a valley, you know; those are all named that I know of it ever going by.

Q. You then, as I understand are acquainted for several miles around, with the conditions as they have existed this last crop season?

A. Yes sir, I have been pretty well all about over the country, in and about the hills for from eight to ten miles and back as far as Ducktown.

Q. And if there had been any damage done through there to

yours and your neighbors' crops, fields and orchards, you have not been able to discover it?

Gen. DRAKE: We except to the question as leading, suggestive, and calling for the answer desired.

1573 Q. State what, if you have seen any damage through there this season at all?

A. No, sir, I have not, by smoke; I want to speak about the fruit business; there are a great many of the fruit trees through that section there where the fruit is no account. It is rotton, with rotton specks and all that, but I don't know what the cause of it is; I would not say as to that; the trees look like they are in bad shape and have been badly cared for. I don't know whether it is caused by the smoke, or whether it is for want of attention and cultivation or what was the cause of the fruit trees being that way.

Q. When a fruit tree is badly cared for, as you express it, does it have rotton fruit on it, when you do not take care of it?

A. That is my judgment, yes sir.

Q. That has been your observation of it?

A. Yes sir.

Mr. HILL: I except to that as being a conclusion without any facts stated upon which to base it and I except to all of this witness's evidence *and* not being in rebuttal.

Cross-examination by Gen. DRAKE:

Q. You have seen smoke over there, I believe you say?

A. Yes sir, I have seen smoke over there lots of times; I can't tell you the number of times where I live now is on a rise up on a hill, and I look down, like that, into the valley, and I can step out in the big road, at my house and see for a mile and a half down to the river bridge; I have seen smoke all through there lots of times.

Q. How many times have you seen it this year?

A. I can't tell you; I wouldn't try to say that, for I don't know.

Q. You have seen it many times?

A. Very often; when the air is out of the north, it comes
1574 right in there.

Q. It comes in there whenever the wind is from the north; north is from Ducktown, and when the wind is from Ducktown you have seen the smoke there?

A. Yes sir, Ducktown is north from where I live.

And further deponent saith not.

T. E. GARREN,
[SEAL.] By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 6th, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 260.

Next witness, J. E. WILSON, for defendants, in rebuttal, being duly sworn, deposed as follows:

Examined by Mr. MILLER:

Q. Mr. Wilson, how old are you?
A. I am fifty-two years old.
Q. Are you a farmer?
A. Why, I live on a farm; my folks work the farm.
Q. How many acres are in the farm?
A. Well, I guess I work forty acres in corn, rye, and such like as that.
Q. How many acres do you own down there?
A. Well, I cannot say that I own that in myself, but I worked it; it is in my mother's name; my father is dead.
Q How many acres are in the whole thing; that is what I am trying to get at.
A. That I have not charge of?
1575 Q. Yes sir.
A. Well, about a hundred and forty acres. Only about forty or fifty acres of that is in cultivation.
Q. Yes; I am talking about the whole acreage; what is grown on the balance of the farm that you do not cultivate?
A. Timber.
Q. How far do you live from Morganton, in Georgia?
A. About nine miles. This is just guess work with me.
Q. How far do you live from Mineral Bluff?
A. Four miles.
Q. What direction from Mineral Bluff, do you live?
A. From Mineral Bluff?
Q. Yes.
A. Well, I reckon you might say it is a north course, a north west course.
Q. How far do you live from what is called Dora or the Dora section?
A. That is on Cut Cane, is it not?
Q. I don't know.
A. Well, I don't know.
Q. How far do you live from Start Creek or Star Creek?
A. From Star Creek?
Q. Yes.
A. Well, that is in above Morganton; that is some nine or ten miles.
Q. How far do you live from Copperhill?
A. Copper Hill? About six miles.
Q. What direction do you live from Copperhill?
A. An east direction.
Q. Do you live on any water course, or near any?
A. I live on Hot House.
Q. On Hot House Creek?

A. On Hot House Creek.

1576 Q. What stream does Hot House Creek empty into?

A. Ocoee River. This river here, Ocoee, I reckon, or Toccoa.

Q. Do you live near any Mountains?

A. I reckon not.

Q. Tell me whether or not you are acquainted with the crops and timber, the fields, and the condition of the gardens in the section where you live, where you and your neighbors have such, during this past season?

A. I have got a good crop where I live; I have got about sixteen acres in corn, fine corn; I have a good garden.

Q. And how about your neighbors' crops and gardens?

A. Well, I don't know anyt-ing about theirs, only just what I have seen from outside appearances.

Q. That is what I am asking you about. How do they look?

A. They look good from outside appearances; I have not been in their crops though.

Q. How about your woodlands?

A. I didn't see anything wrong about my woodlands. My woodland is al- right, sir.

Q. Has any damage been done down through your section to your crops, or woodlands, or your neighbors', this year, as far as you know, by smoke?

A. No sir, there has not.

Gen. DRAKE: We except to all this witness- evidence because it is not in rebuttal.

Cross-examination by Gen. DRAKE:

Q. You live on Hot House Creek?

A. Yes sir.

Q. On what part of Hot House?

A. Well, I reckon you would call it the upper part of Hot House; I reckon you would call that the upper part of Hot House where I live.

1577 Q. Have you seen much smoke over in that Hot House country?

A. No sir, I have not seen any smoke.

Q. You have not seen any at all there, have you?

A. No sir.

Q. You work in Ducktown, do you not?

A. I work for the Tennessee Copper Company.

Q. That is in Copperhill, or over in the Ducktown Country, is it not? That is at Copperhill, is it not, Tennessee? You know where that is, do you not?

A. I know where that is, al- right.

Q. Then why don't you answer the question?

A. (No answer.)

Q. Why don't you answer the question, Mr. Wilson, if you know where it is?

A. (No answer.)

Q. Again I ask you, if you work for the Tennessee Copper Company, why is it that you don't answer the question that that is at Copperhill, Tennessee, if that is the fact?

A. (No answer.)

Q. Do you decline to answer?

A. (No answer.)

Mr. HYATT: Go on and answer.

Gen DRAKE: I except to the lawyers for the Copper Company suggesting to the witness that he should answer the question.

A. How was that? How was that?

Q. Why is it that you decline to answer the question that the Tennessee Copper Company is at Copper Hill, if you work for the Tennessee Copper Company?

A. I worked for the Tennessee Copper Company.

Q. How long have you been working for them?

A. Oh, I don't know. I guess something like fifteen years.

Q. You don't know where they are located, do you?

1577½ A. I know where I am working at for them.

Q. Where are you working for them?

A. Where? Over here at Copperhill.

Q. What part of Copperhill, Mr. Wilson? I want to know where you are working there in Copperhill, what part of Copperhill do you work at for the Tennessee Copper Company?

A. I work there at the boiler shop, the plate shop, in one sense of the word.

Q. What kind of work did you do for the Tennessee Copper Company?

A. I told you I worked there in the plate shop.

Q. In the plate shop?

A. Yes sir.

Q. What kind of work is that? I don't know what a plate shop is.

A. That is in the boiler shop, just all kinds of work that comes up in the way of boiler maker's work.

Q. Your work keeps you over there nearly all the time, does it not?

A. Huh?

Q. Don't your work keep you at Copperhill all the time?

A. No sir, it does not.

Q. Don't it keep you there nearly all the time?

A. It keeps me there a right smart of the time.

Q. How much of the time? How much of the time do you stay at Copperhill? Please tell me if you know?

A. (No answer.)

Q. Do you stay there one day in the month?

A. No, I stay there more than that.

Q. Well, now, how much more; that is what I am trying to get at?

A. (No answer.)

Q. How much more do you stay at Copperhill than one day on the month?

1578 A. Oh, I guess I stay there, have stayed there for the last two or three months, half my time, that is working there half my time.

Q. You stay there all the time you work there, do you not?

A. I stay there half the time.

Q. What days of the week, do you stay half of the time, do you go and work there, and where are you the other half of the time?

A. My work is dull, the work is dull now, and I am not getting full time. That is what I mean by that.

Q. That is what I am trying to get at. Where are you the other half of the time, and have you been for the last month?

A. At home.

Q. Before this, and for the last eight years, you have been working for the Tennessee Copper Company for the last eight years; you can answer that, can you not?

A. I have been working for them for the last eight years.

Q. Yes, have you not continually; I mean by that, only when you have been off for a few days like you say you have been here lately.

A. (No answer.)

Q. Before this little dull time which occur-ed here about two months ago, I will ask you if you did not work there almost every day in the week?

A. (No answer.)

Q. You can answer that question, can you not? please answer it and let's get along.

A. (No answer.)

Q. Don't you know that your work kept you at Ducktown or Copperhill, that it keeps you there practically all the time unless it would be some time at night, until this little dull time a few weeks or months ago?

1579 A. (No answer.)

Q. Go on and answer the question, please.

A. (No answer.)

Q. Do you decline to answer the question?

A. (No answer.)

Q. What is the matter with you Mr. Wilson, that you can't answer these questions?

A. How is that?

Q. What is the matter with you, that you will not answer these questions?

A. (No answer.)

Q. How much have you ever worked for the Ducktown Copper Company?

A. The D. S. C. & I. Company?

Q. Yes.

A. I never worked much for them, I don't know them.

Q. You worked for them some?

A. Some, but I can't tell you—not much.

Q. All the work you have done has been for these copper companies the last fifteen years, has it not?

A. I have been working for them about fifteen years, yes sir.

Q. There has not been any smoke damage at all in your neighborhood, has there?

A. If there has, I cannot tell it.

Q. You have not seen any smoke over in your country at all?

A. No sir.

Q. You never have smelt any, never have smelt any over there?

A. I have never seen any over there.

Q. Have you ever smelt any over there?

A. (No answer.)

1580 Q. Why do you decline to answer the question, Mr. Wilson?

A. I say, if there has been any there, I can't smell good; I have asthma troubles.

Q. And that is the reason you think you have not smelt it?

A. (No answer.)

Q. All the fifteen years that you have been working and living over there you have not seen or smelt any smoke?

A. No sir, I ain't.

And further deponent saith not.

J. E. WILSON,
By R. C. S. HUTCHINSON,
Commissioner.

Sworn to before me this November 6th, 1914.

[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 260.

Next witness ROBERT HAMPTON, for defendant, in rebuttal, having been duly sworn deposed as follows:

Examined by Mr. MILLER:

Q. You are engaged in the mercantile business, I think?

A. Yes sir.

Q. You live where?

A. I live at Mineral Bluff, Georgia.

Q. You have given your deposition in this case before?

A. Yes sir, on the 19th of June, 1914, I think was the date.

Q. It has been claimed, as I understand, that there was some damage done in what is known as the Dora section, the Mineral Bluff section, the Morgantown section, and the Star or Start Creek section of country in North Georgia, and I want to know

1581 & 1582 which of these sections you are acquainted with.

A. I am acquainted with the Morgantown section, and also with the Dora section, and also with the Mineral Bluff section, but not so much so as I am with the Mineral Bluff section.

Q. What occasion have you to see and know about the crops, fields, and gardens in those sections that you are acquainted with?

A. I am in the mercantile business and I am out over the country quite a good deal in collecting, and also in North Carolina over the Country. The condition of the Crops and so on, I observe as something which has to do with my own business.

Q. Have you or not bought any crops or agricultural products this last season, the season of 1914, that were grown this year in those sections?

A. I certainly have.

Q. What commodities?

General DRAKE: I except to that as being original evidence and not in rebuttal.

Q. What crops?

A. Pease, mostly.

Q. What character of crops have been grown through that section this year, the year of 1914, or through those sections that you have asked about.

A. Wheat, rye, pease, corn cabbage, and potatoes.

Q. And what has been the condition of the crops, what character of crops, I mean, as to healthfulness?

A. We have got a phenomenal crop of pease, corn and beans, and a good crop of apples. The potato crop was cut short, owing to the dry weather in May and June.

Q. If there had been any substantial damage done down through that section by smelting operations from the Ducktown section, do you think you would have necessarily *have* known about it?

A. I think so.

Mr. HILL: We except to the question and answer, as calling for and being a conclusion.

1583 Q. Has there been any damage?

A. I have not seen any.

General DRAKE: I except to all of this witness' evidence as not being in rebuttal of anything introduced by the State, as being cumulative and for that reason incompetent.

Cross-examination.

By General DRAKE:

Q. You were on the witness stand in Chattanooga, were you not?

A. Yes sir, I was.

Q. And on the stand at that time, you testified all about the conditions a*b*ound your neighborhood, did you not?

A. Up to the 19th of June, 1914.

Q. Up to that time, the last of June, 1914?

A. Yes sir, I did.

Q. Did you testify that there had been a lot of smoke in there?

A. No, sir, I don't think I did.

Q. You don't think you did?

A. No sir, I don't think I did.

Q. There had been smoke in there, had there not?
A. I can't say there was. There had been smoke, of course, but I can't say what kind of smoke it was.
Q. You have seen plenty of it in there, have you not?
A. No sir, I don't think I have seen plenty of it in there.
Q. Did you ever smell any?
A. Yes, I have smelt smoke in there.
Q. Sulphur smoke have you not?
A. Well, I think so, yes sir.
Q. This year?
A. I can't say I did this year.
Q. Last year?
A. Well, I have smelt smoke in there I don't remember
1584 just when it was.
Q. Now, don't you know, to refresh your recollection, that in Chattanooga you swore that you smelt it there this year?
A. I think I said I smelt smoke in there some time in February.
Q. Of this year?
A. Yes, some time in this year. I think I said that, yes. Very commonly, you smell smoke in the winter time.
Q. You can't smell that kind of smoke in the summer time?
A. Well, the air is not from the west so much.
Q. It depends then, on where the air is from; if it is from the northwest, it would blow it down towards you?
A. No sir, direct west.
Q. You are directly east of it, then?
A. Something like directly east.
Q. And if there is a direct west wind, you get it; otherwise you do not get it?
A. No sir.
Q. Did you not swear in Chattanooga that you saw some *some* in there in the early part of the spring this year?
A. I don't think I did.
Q. I will ask you if I did not ask you this question:
"Q. Have you not seen the smoke in that country in Fannin County this year?"
A. Yes sir, I swore that.
Q. And didn't you answer this way: "A. I have seen smoke, or something that looked like smoke, and I distinctly smelt the fumes in February, but I do not remember whether I smelt it since that time or not, but I did some time back in the early part of the spring"?
A. I think so, yes sir. That is what I replied a little while ago.
1585 Q. In the early part of the spring you did smell smoke?
A. Is February in the Spring?
Q. Did you not say that you smelt some in February, and then later on in your answer did you not say you smelt it in the early part of the spring, also?
A. I don't remember that, I remember saying that I smelt it in February,

Q. Did you swear that this season, in your examination taken in Chattanooga?
A. I suppose I did, yes sir.
Q. Then did you smell it in the early spring?
A. Well, take it that way.

Redirect examination.

By Mr. MILLER:

Q. February is not far from the early spring, in your section, is it?
A. No sir, it is the last winter month.

General DRAKE: I except to that question, because the calendar is the best evidence of when February comes. The court will take judicial cognizance of the fact that it is a winter month, and the coldest one we have.

Q. Now, when you smelt smoke, was there any sign, when you got a whiff of smoke, that there is an amount sufficient to do any damage?
A. I have smelt smoke when I saw no damage.
Q. You can light a sulphur match and smell it across the street sometimes, can you not?
A. Yes sir.
Q. And if you approach a village from out in the open country in the woodlands, you can smell the coal smoke two or three miles from the village, can you not?
A. Yes sir.

Mr. HILL: We except to the two foregoing questions, as being not only leading and suggestive, but putting the answer in
1586 the mouth of the witness.

And further deponent saith not.

ROBERT HAMPTON,
By R. C. S. HUTCHINSON,
Commissioner.

[SEAL.]

Sworn to before me this November 6th, 1914.

Mileage, 240.

Next witness, F. T. LARGENT, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by Mr. MILLER:

Q. How old are you?
A. I am going on thirty-five years old.
Q. Where do you live; if you live in North Georgia, tell us in what locality.
A. Northeast of Fannin County, Georgia.
Q. Are you acquainted over in what is known as the Dora, the

Mineral Bluff, Start Creek, Morgantown, or any of those sections, any or all of them?

A. A little bit; the fire-clay district, I live in it.

Q. With which of those sections are you acquainted?

A. The fire clay district mostly.

Q. How about Dora, Mineral Bluff, Morgantown, and the Start Creek sections?

A. I am not acquainted in them.

Q. Are you acquainted in any of these sections?

A. I have been through there a few times.

Q. Have you been through there this year?

A. No, I don't think I have been through there this year.

Q. Have you been out with any of the witnesses from
1587 down in that section that you claim that were damaged by smoke this year, looking for smoke signs?

A. Yes, I have been out with one, on my place.

Q. What was his name?

A. Tom Henson.

Q. He was taking you out to find smoke damage?

A. The Tennessee Copper Company put some money in the bank, $16,500, I think, for damages, and he had put in a claim for damage, and I told him, "Henson, I don't think you are really damaged".

General DRAKE: We except to all that evidence as being irrelevant, hearsay, immaterial and not in rebuttal.

Q. You went out to hunt for damage, to see if you could support his claim against the Tennessee Copper Company?

A. Yes, we were out looking about for them.

Q. Did you find any?

A. We found some corn that was in roasting ears, in silk you know, and he showed me where he was really damaged four or five different ears and I told him, I said "Henson, hold still and we will examine this corn and see what is wrong, whether the smoke killed it or something else has damaged it, and I tore in it, I pulled open three ears, I believe, and there was a worm, a corn worm, had cut the silk off around plumb to the cob, corn and all. And that was what he claimed the smoke had damaged.

General DRAKE: We except to all that as being incompetent irrelevant, and not in rebuttal of any thing introduced by the State, and further, as hearsay.

Q. What is your post office?

A. Sweet Gum, Georgia.

Q. How far do you live from Mineral Bluff?

A. Something over eight miles.

Q. How far from Morgantown?

1588 A. About eight or nine miles, something along there.

Q. How far do you live from Star or Start Creek?

A. I don't really know just how far it is.

Q. Do you know where Dora is?

A. Yes sir.
Q. How far do you live from there?
A. Something like three miles, I guess.
Q. In what direction do you live from Dora?
A. North, I suppose.
Q. You live nearer to Copperhill than Dora, do you?
A. Yes sir.
Q. You live between there and Copperhill?
A. Yes.
Q. Do you live nearer to Copperhill and Mineral Bluff, or Morgantown?
A. No, they are nearer than I am, a little bit.

General DRAKE: I except to all the evidence of this witness as irrelevant and incompetent, for the reason that it is not in rebuttal and relates to no evidence that was taken on behalf of the State.

Cross-examination.

By General DRAKE:

Q. You live away back up next to North Carolina, do you not, Mr. Largent?
A. Yes; in the northeast corner of Fannin County.
Q. The witness that you spoke about going out with, is not a witness that the State used in this case, is he?
A. I don't know whether they used him or not; I don't reckon they did; if they did, I don't know it.
Q. You say "Sweet Gum": is that a Creek away back up there?
A. It is known as Sweet Gum station on the Murphy Branch.
Q. Is that not the last station in Georgia next to North Carolina, on that road?
1589 A. Yes.

Redirect examination.

By Mr. MILLER:

Q. You say when you showed that fellow it was worms that had damaged his corn, the State of Georgia did not use him in this case?
A. I don't know whether it did or not.

Mr. HILL: We except to that, as being improper, for the reason there was no evidence calling or authorizing such conclusion on the part of counsel embraced in his question; and further, because irrelevant, immaterial, and not in rebuttal, and the State of Georgia never thought of using witnesses from the edge of North Carolina, and did not introduce any evidence at all in the neighborhood of Sweet Gum, as the record shows in this case.

A. (Cont'd.) I have been up there four years farming, and when I went there my farm, part of the land, produced something like ten or fifteen bushels to the acre, and I improved my farm, and this year I expect I have averaged right at 65 bushels to the acre, and if I have been hurt any way by smoke, I do not know it.

General DRAKE: We except to the answer, for the reason that it is not in rebuttal. We admit they raise good crops in North Carolina, in the edge of North Carolina, and even in some parts of Tennessee.

Q. How far do you live from Copperhill?

A. I expect it is somewheres in twelve to fifteen miles.

General DRAKE: We except to the last statement, as being voluntary upon the part of the witness, and not in rebuttal.

And further deponent saith not.

F. T. LARGENT,
By R. S. C. HUTCHINSON,
Commissioner.

1590 Sworn to before me this November 6th, 1914.
[SEAL] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 260.

Next witness, E. L. STANLEY, for defendant, in rebuttal, having been duly sworn deposed as follows:

Examined by Mr. MILLER:

Q. Mr. Stanley, how old are you?

A. I am 33 years old.

Q. You live in Georgia?

A. Yes sir.

Q. In what county?

A. Fannin County.

Q. At what Post Office?

A. Morganton.

Q. How far do you live from Morganton?

A. About one mile.

Q. What direction from Morganton do you live?

A. A west course.

Q. Are you acquainted with the Morganton sections generally, that is, around in the neighborhood?

A. Pretty well, yes sir.

Q. A few miles around in all directions?

A. Yes sir.

Q. Are there a good many farmers living down through there?

A. Yes sir, several.

Q. Do you endeavor to raise gardens—do your neighbors raise gardens and crops on their farms?

A. Yes sir.

Q. Do they have woodlands?

1591 A. Yes sir.

Q. Are you acquainted in either the Dora section or the Start Creek section, or the Mineral Bluff section?

A. Not the Mineral Bluff section, I am not.

Q. Are you acquainted in the Dora and Start Creek sections?

A. Star Creek, yes sir.

Q. Are you pretty well acquainted in that section of the country?
A. Yes sir.
Q. I will get you to state whether there has been any damage done the crops and gardens and fields and orchards in those sections now where you live and where you are acquainted, either those of your neighbors or yours, by smoke, this last year?
A. I have not seen any that I could say that Ducktown smoke did it; I have not seen any.
Q. What kind of crops have you and your neighbors grown there this year?
A. Good crops.
Q. Have you raised corn?
A. Yes sir.
Q. Potatoes?
A. Yes sir.
Q. Pease?
A. Yes sir.
Q. Beans?
A. Yes sir.
Q. Garden products?
A. Yes sir.
Q. Have the orchards grown fruit?
A. Yes sir. On the place where I live, it is potatoes mostly; no apples.
Q. How have your crops your own, compared with crops in other sections of the country that are quite a distance away from there?
1592 A. As far as I *ah*ve seen, do you mean in the district I live in and others?
Q. Yes.
A. Well, what I have seen are just about an average.

General DRAKE: We except to all this evidence, because it is not in rebuttal.

Cross-examination.

By General DRAKE:

Q. You say the crops are about an average this year?
A. Yes sir.
Q. Are there any phenomenal crops in that country—there are not any phenomenal crops in that country then this year?
A. They are better than they were last year; I have lived there five years, I reckon, at that place.
Q. What I asked you, is this: Isn't this a phenomenal crop year up there in the Morganton country; by that I mean the biggest crops, the finest crop, that you ever heard of in your neighborhood within the memory of man?
A. Well, I can't say that it was, on my own; I know my own is better than I ever made there, and the fellow that joined me.
Q. But the country generally is about an average?
A. Off from there.

Q. How much land do you own?
A. I don't own any land whatever; I rent.
Q. You don't own any land at all?
A. No sir, I don't own any land at all.
Q. How old are you?
A. I am about 33 years old.
Q. How often have you seen smoke in your country this year?
A. I can't tell you.
1593 Q. How often have you smelt it?
A. If I have smelt it, I do not know it.
Q. You have seen it there this year a good many times, have you not?
A. Oh, yes, I have seen it there, yes sir.
Q. It would settle down in the coves, would it not?
A. Yes, on the river.
Q. You live down close to the river, do you?
A. Yes sir, right at the mouth of Start Creek.
Q. And there is nothing but peach trees on the farm where you live?
A. Yes sir.
Q. How often does the smoke come in there that you have spoken of?
A. I couldn't say.

Redirect examination.

By Mr. MILLER:

Q. It comes every time the leaves catch on fire or you burn brush, don't it?
A. Yes sir.

General DRAKE: We except to that as being leading, the question putting the answer in the mouth of the witness.

Recross-examination.

By General DRAKE:

Q. Don't you know that the Ducktown Copper Company's smoke that you have seen boil out of the top of those stacks over there comes over in your neighborhood, you have seen it, have you not, seen that kind of smoke in there when the woods were not on fire?
A. I can't say to that; it was smoke. It was all over the whole country everywhere.
Q. Have you not seen the smoke all over the country like you describe when there were no woods on fire?
1594 A. Yes sir, I have seen smoke there.
Q. And it was what your neighbors and everybody called "Ducktown" smoke.
A. Yes sir, that is what they all called it. I have heard them call it that, of course.

Redirect examination.

By Mr. MILLER:

Q. As I understood, there was no damage from any of the smoke?
A. No sir, I saw none.

Recross-examination.

By General DRAKE:

Q. You will not swear there has been no damage done?
A. No sir, but I will swear I have not seen any done.

Redirect examination.

By Mr. MILLER:

Q. I understand, if there were any of your crops damaged, that you would, put in a claim against the Tennessee Copper Company?
A. Yes sir.
Q. You didn't put in any claim?
A. No sir.

And further deponent saith not.

E. L. STANLEY,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 6th, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 230.

1595 The further taking of depositions was here adjourned until Saturday, November 7th, 1914, at nine o'clock A. M. at which time same resumed pursuant to adjournment.

Next witness, J. M. DAVIS, for defendant, in rebuttal, having been duly sworn, deposes as follows:

Examined by Mr. FOWLER:

Q. Mr. Davis, where do you live?
A. I live four miles east of Blue Ridge, on the Toccoa River.
Q. How near do you live to Mr. John J. Turner?
A. Something like a mile or a mile and a quarter.
Q. How near do you live to R. H. Smith?
A. Well, it is a mile and a half or three-quarters to his place, something near. I have not measured the distance, but somewhere near that.
Q. Do you own the place on which you live.
A. I own the place on which Mr. Turner lives. I know where Mr. Smith lives, but I have never been on his place.
Q. Have you been on the Turner place any this year?

A. I have been by it. The road is like this; I have been by on the road here, and here is the line between him and Mr. Rodgers, or between the place he has and Mr. Rodgers, and I have been here on this side of the line, with just a small brance between.

Q. Do you own a place of your own?

A. A small lot, yes.

Q. Have you been cultivating crops this year?

A. Yes sir.

Q. What kind of crops have you been cultivating?

A. Corn, potatoes, and pease, principally. I had some garden stuff, made some stuff for the garden market.

Q. How many pease have you, how many acres have you had in pease this year?

1596 A. I had three acres in pease alone, and I had something like four acres in pease and corn.

Q. When did you sow your pease?

A. Along the first of June, I guess.

General DRAKE: I except to all this evidence because it is not in rebuttal.

Q. How long does it take pease to come up?

A. Well, that varies according to the moisture of the soil and the warmth of it.

Q. Were your pease up and growing by the first of July?

A. Yes sir.

Q. State whether or not your pease have been injured by smoke fumes this year?

A. No sir.

Q. Has any of your garden truck been injured this year?

A. I have not seen a particle of smoke signs on my place.

Q. Have any of your crops been injured in any way from smoke fumes?

A. No sir.

Q. Have your fields, or the forests of your neighborhood there and around where you live, and near Turner?

A. Well, I have not noticed much the forest, up around Turner there, but around in our neighborhood I have not seen a single leaf discolored by Ducktown smoke.

Q. During the present year?

A. During the present year.

Q. You have heard talk about the Ducktown smoke?

A. Quite a little.

Q. And has that or not caused you to give special attention to it?

A. Sure, I have given attention to it for that reason.

General DRAKE: I except to the question, because it is 1597 suggestive of the answer.

Q. Go ahead.

A. For this reason, there is an appropriation made you understand, by the Tennessee Copper Company, and I thought I might as well have my part of that as anybody.

Q. And you have seen none?
A. I see no signs.

General DRAKE: I except to all this evidence as immaterial, not in rebuttal, and as being original evidence.

Cross-examination.

By General DRAKE:

Q. Are there any mountains near you there, Mr. Davis, or what kind of a country is it that you live in?
A. It is a hilly country; there are no large mountains near my place.

And further deponent saith not.

J. M. DAVIS,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 7th, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 238.

Next witness, W. E. ROGERS, for defendant-, in rebuttal, having been duly sworn, deposed as follows:

Examined by General FOWLER:

Q. Where do you live Mr. Rogers?
A. I live up four miles above Blue Ridge, near Morganton, on the Toccoa River.
1598 Q. How near Mr. J. M. Davis do you live?
A. His land and mine join; I have an apple orchard there right up against his, joining his farm.
Q. How near to John J. Turner do you live?
A. The place he lives on is a farm, and my farm joins, with just a small branch between us.
Q. How near do you live to R. H. Smith?
A. I suppose that is Henry Smith; it is a mile to where he lives.
Q. Do you own a farm there?
A. I own about three hundred acres of land.
Q. What kind of crops do you raise?
A. I raise corn, pease, hay, grain, millet, and garden stuff, potatoes, and such as that. I garden a right smart.
Q. Do you raise garden truck to sell?
A. Yes sir.
Q. How large a peice of land did you have in potatoes?
A. I had about three acres in Irish potatoes; something like that; half an acre in tomatoes, four acres in melons an acre or so in early corn, and the rest in late corn.
Q. How near is you- garden patch to the garden of this man Turner?

A. It is about a quarter of a mile from my garden up to his. His garden is on the side of the public road, the main road from Blue Ridge to Morganton.

Q. In what direction are your lands from Turner's?

A. South; rather southeast.

Q. How many pease have you raised this year?

A. Well, I didn't raise any pease to sell. I sowed them to make hay out of for my cattle—my stock.

General DRAKE: I except to all that evidence, as not being in rebuttal of anything proved by the state.

1599 Q. When did you sow your pease?

A. I *sold* them along about the first part of June, about the last of May, I don't remember positively. It may have been the last days of May. It was either the last days of May, or right at the very first of June.

Q. Have you seen smoke in that section through there this year?

A. I have noticed some smoke in there. It looked smoky kind of hazy.

Q. Do you remember any special time when you noticed that?

A. No sir.

Q. State whether or not any of your crops, either garden products or field products have been injured in any way this year?

A. Not that I could tell. I watched very closely, there was so much talk about damage and so many putting in claims that I watched very closely to see if my stuff was damaged, and I never noticed any discoloration on them, on my garden stuff, field stuff or forest, either, though I watched with all the eyes I had.

Q. How close were your pease to this land that Turner was cultivating?

A. I guess it was about 200 yards.

Q. Was your field of pease adjoining the Turner land?

A. Yes sir, there was just a small branch between them.

Q. What did Turner have in; what was growing on the Turner land across this branch?

A. There was a meadow first, a little strip of meadow, and then came corn and pease.

Q. Did you notice anything wrong with Turner's crops?

A. I never was over his field during the whole season. All I know about his, is what I could see from the road, what was lying on the land next to the public road.

1600 Q. What did you have that was along the public road?

A. His garden was right by the side of the public road, and then a field of corn—well, no, his corn was not on the public road; that belonged to Mr. Wilson. He had a piece of land rented right on the road; he was not tending the entire farm.

Q. Turner's crops, his garden, was on the road?

—. ——.

A. Was there anything wrong with Turner's garden?

A. I did not notice anything wrong, just passing by; I never examined it.

Q. Was your attention attracted to it in any way?
A. No sir, it was not.
Q. Was there anything wrong with Mr. Wilson's corn?
A. It was the best corn on that square of ground next to the public road I have seen on it since I have been in the county.
Q. Have you noticed anything wrong with any of the crops, anybody's crops this year, as the result of smoke fumes?
A. No sir, not of smoke. I have in other respects, but not along there from smoke.
Q. State whether or not there was a pretty bad drouth in that section?
A. Yes sir, they had a bad drouth. There was an extremely dry spell in the fore part of the summer, and the people prepared—they did not plow their land properly, or sowed too early, and consequently a great many of them had short crops; they could not be otherwise; the weather was dry, and dried out the soil.

General DRAKE: I except to all this evidence as irrelevant, immaterial and not in rebuttal.

Q. Have you been on Smith's land?
A. No sir.
Q. State whether or not you were present when a number of photographs were taken some two months ago.
A. Yes sir, there were some photographs taken there; some
1601 gentlemen came on my place and I was hauling out melons, the last load of melons out of my crops, those that would be ripe over night.
Q. Do you remember how many were taken there?
A. I think probably there were one or two views taken right there at the melon patch, and probably one about my barn, of the corn and pease up the river.
Q. Who were the gentlemen that took them?
A. Mr. Reese was one, and I think the photographer was named Thompson, as well as I remember, I would not be positive.
Q. Would you recognize the points photographed, if the pictures were shown to you?
A. I think so.
Q. I show you photograph No. 126, taken by Mr. Thompson. State whether or not you recognize the place shown by that photograph.
A. This is up the river above my place a mile or more.
Q. Were you present when it was taken?
A. Yes sir.
Q. On whose farm was it?
A. On Mr. Jim Baugh's farm.

General DRAKE: We except to this evidence and this photograph, for the reason that it is not in rebuttal of anything that the state introduced. As I remember, this Mr. Baugh, of whom the witness speaks, was introduced by the Ducktown Copper Company.

Q. What farm is that on?

A. This view shows part of the L. C. Allen farm, and part of the Jake Smith farm on Star Creek.

Q. Does it show part of the Henry Smith place?

A. Yes sir, it shows the place where he cultivates; he tends his father's place; he has not got any place of his own. This
1602 view is kind of back up Star Creek; this is not down the river.

Q. I show you photograph 127, Explain what place is there represented.

A. Yes sir, I recognize this view very readily.

Q. What is it?

A. This is Old Tomato Patch on the bank below my residence.

Q. How close is that to this man Turner's place?

A. It is between a quarter and a half mile.

General DRAKE: I except to this photograph as being taken at a place not referred to by the State, and not being in rebuttal of anything the State had introduced.

Q. I show you photograph No. 124, Please state of what that is a picture?

A. This is a picture of a portion of my farm, back up the river from my place, and it shows part of the pea fields, part of two pea fields, and this is the first part. Here is a four acre lot of land in corn where the tops and fodder has been taken and shocked on it, and further up is a 12 acre square on the river that has not been foddered.

General DRAKE: I except to this evidence, for the reason it is not in rebuttal of anything the State introduced.

Q. I show you photograph 123. Please explain of what that is a photograph.

A. Well, sir, that is a picture of one of my teams and myself driving, hauling watermelons. There is an old patch of corn planted there also in that view.

General DRAKE: I except to that photograph as evidence because it is not in rebuttal.

Q. I show you photograph No. 128. Please explain of what vicinity that is a picture.

A. This is in the lower end of the melon patch, four acre melon patch, fronting back up the river on my farm.

1603 General DRAKE: We except to that, for the reason that it is not in rebuttal.

Q. I show you photograph No. 125. Please explain of what that is a picture.

A. That is the entire view back down the river from up above my place.

Q. Does that include the Chastain farm?

A. Yes sir.

Q. Is that or not the farm on which this man Turner lives?

A. Yes sir, this is L. A. Allen's farm. You can see one corner of Baugh's farm. You can see the entire Chastain farm, my farm and part of R. C. Miller's across the river west of me.

Cross-examination.

By General DRAKE:

Q. Mr. Rogers, you have taken a good deal of interest in representing the copper company in this matter, have you not?

A. No sir.

Q. Why was it you went with them a mile and helped them to take pictures, or the pictures you have testified about?

A. Mr. Reese, here, asked me if they could get a view from up there, and I told him yes, and I think Mr. Thompson asked me if I cared to go up there with them, and I told him no. That was the only trip I ever made with them anywhere, sir.

Q. You did volunteer to go with them up there and show them a view?

A. Yes, I went with them on that trip.

Q. Now, don't you know, Mr. Rogers, that there could be lots of trees and vegetation burnt and scorched by sulphur fumes and those pictures that you have testified about here not show it at all?

1604 A. Well, I don't know about that, sir. I can't answer.

Q. Do you not know that those pictures do not show lots of things that you know do exist there, in that view as you look at it?

A. I suppose there might be a few small things that are not shown in it. I recognize very readily the lands and crops. I can distinguish them very readily.

Q. Do you not know that those pictures are not true to nature?

A. Well, it looks very true to me.

Q. Do you not know that it does not look like it does when you stand and look at a forest?

A. It looks just as natural to me as a picture could look.

Q. Don't you know that you cannot see or distinguish a single leaf, hardly in those pictures?

A. Well, I don't know as I could stand off there and sort them out and state that one was a white oak and another a post oak.

Q. Then you don't swear that that picture is true to nature, do you?

A. It looks as true to me, and I would swear that it is as true to the best of my knowledge, as a picture could be. It represents all those farms and fields.

Q. It is true, you say, as true as a picture could be? Don't you know that it is not true or a perfect representation of nature?

A. It looks so to me.

Q. Didn't you just say that you could not tell a white oak from a black oak, nor a sweet gum from a black gum, nor anything else of that kind in the picture?

A. Not as far off. It shows they are all green, and growing, to me.

1605 Q. When you and I and General Fowler looked at that picture just now, did I not ask you if there was not sage grass in that picture, and you told me there was not?

A. There was no sage grass down that valley.

Q. Didn't General Fowler ask you if there was not sage grass in that picture; didn't he ask you that just now?

A. No sir, not that I remember of now.

Q. When we were looking at them there, did you not say there was no sage grass in there?

A. I said: I beg leave to differ; I didn't think there was any sage grass there.

Q. Was not General Fowler talking about sage grass turning a little brown in there; didn't he do that just a minute ago?

Q. He mentioned something about sage grass, and I said, I beg leave to differ; I didn't think there was any sage grass in the picture.

Q. Could not their corn, as shown there in the picture, be almost bare of ears *or* corn, and that picture not shown it?

A. In that large one of course the corn could be short, a short crop, and I suppose you could not tell it that far. That first picture of the near field that was taken at my barn, shows very plainly what that corn is, to me.

Q. It shows to you, but would not show it to a man that did not know that the corn was there, would it?

A. It looks like that to me, on that first field.

Q. Are you now in the employ of the Ducktown Copper Company?

A. No sir.

Q. Haven't they got you employed to come up here?

A. Sir?

Q. Haven't they got you employed to come up here as a witness?

1606 A. I was asked to come down here.

Q. Are you not employed by the Company?

A. I don't know as I could call it that. They said probably they would want me to recognize some photographs.

Q. Didn't you agree, did not they agree to give you a stipulated price?

A. No price was agreed on. They says, We will take care of—we will pay your expenses down there so you can leave your business and go.

Q. You haven't given any stipulated sum then?

A. No sir.

Q. Nor any agreed upon?

A. No sir.

And further deponent saith not.

W. E. ROGERS,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 7, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 238.

Next witness, B. H. HOLT, for defendant, in rebuttal, having been duly sworn, testified as follows:

Examined by Mr. FOWLER:

Q. Mr. Holt, where do you live?
A. I live at Blue Ridge.
Q. Do you travel to any extent through North Georgia?
A. No sir, I have not for the last year.
1607 Q. Have you been down about Ellijay?
A. Yes sir.
Q. Through what section around Ellijay have you been?
A. Well, I have been out on Tails Creek.
Q. In Cartecay Valley?
A. Yes sir.
Q. How often have you been in Cartecay Valley?
A. Well, I have been there but twice this year.
Q. When was that?
A. Along about—I have notes that I can refer to—I believe it is about the eighth; I would not be positive; let me see. (Witness starts to inspect notes.)

General DRAKE: I object to the witness referring to his notes to tell when he was down there.

A. (continued). I think it was about the eighth.
Q. The eighth of what month?
A. Of September. I would not be positive that was the date, but it was in September.
Q. Were you in company with some parties who examined the timber through that section?
A. Yes sir.
Q. Who else was in the party?
A. Mr. Reese and Mr. Thompson and the chauffer, and Mr. Carter—Mr. Carter was the chauffer. He was driving the car.
Q. Was that the trip on which many photographs were taken?
A. Yes sir.
Q. Were you present when the photographs were taken?
A. Yes sir.
Q. I wish you would describe that trip, just where you went.
A. Well, do you mean on the whole trip?
Q. State in a general way where you went.
A. The first trip we went out the Cartecay Road, down
1608 to Cartecay Post Office, down by Dyke and Yukon and to Ellijay. I would like to refer to my notes, so as to get my dates right.
Q. Refer to your notes.
A. We went from Cartecay over to Dyke, and from Dyke over

to Snider, and came back by Dyke and went down the Jasper road, and to the Finley Settlement, and Allen Settlement, and Teems; there are a whole lot of places where we made pictures.

Q. I don't care so much for the names as for the different sections through which you passed.

A. We went back to Ellijay and stayed there that day.

Q. Were you on Turniptown Mountain?

A. Yes sir.

Q. What parts of Turniptown Mountain were you on?

A. Well, I don't know what you term as Turniptown Mountain. What I know as the Turniptown Mountain is down about the Shippen farm in the Valley and the Arnold orchard, and the Northcutt orchard is on Walnut Mountain, and we know them that way. The Arnold orchard is on the Smith Mountain. I don't know how it is on the map. It is all Turniptown Mountain, I suppose; there are two Turniptowns there.

Q. You were not up on top of Turniptown Mountain?

A. I was up on top of the mountain, that is, on the Walnut and Smith Mountains.

Q. You say that is all called Turniptown Mountain?

A. I suppose it would be called Turniptown Mountain; some call it that; away down there, is where we went.

Q. Were you on Bush Head Mountain?

A. Yes sir. That is between Ellijay and Higdon's Store.

Q. Were you on Flattop Mountain?

A. No sir.

Q. Did you make any special examination of the forests on Bushhead Mountain?

1609 A. Well, not specially we did not; just a general observation the best we knew how to look.

Q. Did you take a number of photographs at various places you visited?

A. Yes sir.

Q. State whether or not you photographed the most favorable places, or did you pick out representative places?

A. We took representative places.

General DRAKE: We except to that question and answer, because the question suggests the answer to the witness and puts it in his mouth.

A. (cont'd). We took fair representations of the situations as nearly as we knew how; we took representative ones as much as we could.

Q. How much time did you spend there on that trip?

A. About twenty-one days and a half.

Q. Did you examine the crops in that vicinity?

A. Yes sir.

Q. What kind of crops did you examine?

A. Corn, beans, pease, and tomatoes.

Q. State whether or not you are more or less familiar with smoke injury to vegetation and the forests?

A. Well, I think I know what smoke injury is; I know it when I see it.

Q. How long have you lived in Blue Ridge?

A. I have only been there two years.

Q. Where dod you live before you came there?

A. At Ellijay, in Gilmer County.

Q. Then you are fairly familiar with that whole vicinity in there?

A. Yes sir, I was born and raised there.

Q. Were you raised right in Ellijay?

A. No, I was raised in Turniptown Valley, on the place known as the old Holt farm.

1610 Q. State whether or not you passed through a considerable part of the forest and over quite a number of farms in that vicinity, on this trip?

A. Yes sir, we met a good many.

General DRAKE: I except to that question and answer because the question suggests the answer.

Q. For what purposes did you go on that trip and make these examinations?

A. For the purpose of seeing if there was any damage done by smoke.

Q. State whether or not you could detect any damage from smoke to the forests?

A. Well, I never saw any on the whole trip, in any county except one place that I thought was from smoke.

Q. Where was that?

A. That was close to what they call Barnes Mountain, Barnes Gap, back through the Petersons' somewhere back toward Higdon's Store.

Q. Now, as to those sections around Ellijay and in the Cartecay Valley on Turniptown Mountain, to Bushhead Mountain and through there; Did you detect any injuries from smoke?

A. I did not.

Q. Was there any injury to any of the growing crops of any variety?

A. None that I could tell.

Q. State whether or not they had the usual amount of crops growing through those vicinities?

A. Yes sir, just about the same as they generall- grow but it was much better.

Q. How did the crops compare this year with other years?

A. They were considerably better I think.

Q. Did you ever see a better crop through those vicinities, than are growing this year?

A. I don't think I ever did.

1611 Q. How old are you?

A. Forty-five.

Q. And you have known that country all of your life?

A. I was born and raised there.

Q. Did you not examine Arnold's orchard?
A. Yes sir.
Q. Did you examine Northcutt's orchard?
A. I made a trip through it; we did not examine it, as thoroughly as we did the Arnold orchard, but we went through it.
Q. Describe the condition of the Arnold orchard.
A. That would be very hard to do. It was in a very bad state of cultivation, grown up with bushes and briars, and it has not been properly cared for. It has not been properly pruned. I could not say about the spring, but they have got a considerable amount of disease in there of different kinds.
Q. What kinds of disease have they in the orchard?
A. They have the scale, and the Coddling Moth, and the Aphis; they get on the roots. I don't know what it is myself. That is the way I pronounce it. I don't know how it is called.
Q. Did you ever engage in the orchard business?
A. I worked two years in that orchard, in the Northcutt orchard, not the Arnold orchard.
Q. Did you have charge of the Northcutt orchard at one time?
A. I had charge of it, cultivating it, pruning it, and settling it out, etc.
Q. Was the San Jose Scale on the Northcutt orchard when you had charge of it?
A. Yes sir.
Q. How long ago has that been?
A. Well, eight or nine years ago. I don't remember just the date.

Q. Do you know whether or not it has been in orchard
1612 ever since?

—. ——.

Q. What is the condition of the Northcutt orchard now?
A. It is in bad condition.
Q. Describe its condition.
A. It has been very poorly cultivated, and has grown up pretty much in weeds, briars, and broom sage. In some places the bushes are as high as the trees; and around the edges in parts of it, and some places of it have been cultivated.
Q. What kind of diseases did you find in the Northcutt orchard?
A. Pretty much the same as in the Arnold orchard.
Q. Did you find a disease known as the spot——

General DRAKE: We except, because the question suggests the answer.

Q. — sometimes called frog-eye?
A. Yes sir. That is, on the foliage, that you are speaking about, on the leaves; it comes in bl-ck spots. I don't know what the proper name of the disease is.
Q. What is the appearance of the leaves effected with the spot, or frog-eye?
A. They have brown spots on them, and eat holes out, and they turn brown around them, and the edges of the leaves curl up.

Q. Was or not both of the orchards affected with that disease?
A. Yes sir.
Q. Do you know what time of year that disease usually appears in an orchard?
A. No sir, I do not.
Q. Are they affected pretty much all the season with that disease?
A. I don't think they are, early in the spring; I am not sure about it; I do not know.

Q. State whether or not, in examining those orchards
1613 you found any indication or evidence whatever of injury from smoke fumes?

A. I did not see anything that I thought was from smoke. I could not say positively about it, but I did not see anything that looked like smoke injury to me.
Q. Now, you have described one trip. Did you take another one, or not?
A. When?
Q. This fall.
A. No; we made them all right along at the same time in different parts of the country.
Q. The 21 days that you have mentioned were consumed on both trips altogether?
A. Yes sir, we made them right straight along. We set in the first of the month and worked on. I may be mistaken about that. I think may be we worked some before that.
Q. Now you speak of seeing something that looked like smoke injury in some places. Where was that?
A. That was over in Fannin County, from Higdon's Store back across to Barnes' Mountain. There is a little section in through there where the leaves were browned in spots, about that I thought was from smoke. I don't know whether it was or not.
Q. What was the extent of the apparent injury there?
A. Very little. I could not say. The leaves were just browned a little.
Q. Did you see anything like dead trees?
A. I saw trees that had been dead, and things, there.
Q. Did you see any trees dying this season?
A. I saw a few, yes sir, on the whole trip, scattered here and there about.
Q. Did you see any more trees dying in this section that you mention, where there was more injury than in any other section?
1614 A. No sir.

General DRAKE: We except to the question, because it suggests the answer, and as calling for a conclusion.

Q. Did you see any crops anywhere in that section where you say there was some appearance of injury from smoke?
A. Yes sir.
Q. What kind of crops?
A. Corn, beans and pease.

Q. Did you observe any injury to the crops?
A. Not a bit.
Q. Was the corn looking good?
A. It was as fine a crop as I ever saw.
Q. Did the gardens look well?
A. Yes sir.
Q. About how large a section was that where you were through there was here and there some foliage scorched?
A. It was something like a couple of miles, I guess, in different spots. Maybe a little further and maybe a little shorter. From Barnes' down to Hidgon's Store.
Q. Did you visit any other points and localities other than those you have mentioned?
A. I did not get through stating them. We made a trip out from Copperhill and came out by the Mobile mines, and back up through what we call Bell's Hollow, in that direction, and Pack's and old man Richards' and up to Old Man Barnes' and the Oasis post office.
Q. On all of your trips did you notice any apparent smoke injury other than that you have described?
A. No sir.

Cross-examination.

By General DRAKE:

Q. What kin are you to Ham Holt, who testified here yesterday?
A. A cousin.
1615 Q. What is your profession?
A. I was raised a farmer. The last two years I have been working in a store.
Q. Working in a store?
A. Yes sir.
Q. At Blue Ridge?
A. Yes sir.
Q. Did you ever work for the Copper Companies, either of them?
A. No sir, I never worked at the mines any.
Q. How is that?
A. I never worked for the company at the mines, any.
Q. Did you ever work for them anywhere?
A. On outside work, traveling for them, I have.
Q. You traveled with them?
A. Like on these inspection trips.
Q. You have done that at various times, have you not, made inspection trips for them?
A. Yes sir, a few times.
Q. How much do they give you for doing this kind of work for them?
A. Well, they give different prices.
Q. Give the different prices, please.
A. On inspection trips over the forest, they give four dollars a

day and expenses, and on a trip like this up here, three dollars a day.

Q. You mean like up here today?

A. Yes sir.

Q. But when you do forest work, they give you four dollars?

A. Yes sir.

Q. You speak about seeing frog-eye in Northcutt's orchard, I believe, did you not?

A. Yes sir.

1616 Q. What kind of a disease is frog-eye?

A. I don't believe I can explain it to you, sir.

Q. You don't know what causes it, do you?

A. I do not.

Q. This Aphis that you speak of, what causes it?

A. I can't tell you sir.

Q. You don't know anything about the nature nor the cause of it, either?

A. I don't know what causes it; I know it is on them.

Q. The San Jose Scale; What kind of a disease is that, and what causes it?

A. I cannot tell you what causes it. I think I know it when I see it. I know it is mighty bad on an orchard when it gets on it.

Q. You were down there, I believe you say, on September 8th?

A. I would not be positive about the date. I was in the Northcutt orchard about the 5th, I think.

Q. The 5th of September?

A. I think it was.

Q. When did you begin that trip?

A. It was on the first day of September.

Q. And wound up then about the 21st, if you were out for twenty-one days, as I believe you say?

A. I was out twenty-one days, but I think we did a little work before that. We commenced the first day of regular work, September first.

Q. How many times have you testified for this Copper Company before?

A. Just one time, I think.

Q. On all the trips you have made, and everything, you have never testified but one time for them?

A. That is all I have any recollection of.

1617 Q. How is that?

A. That is all I have any recollection of.

Q. Did you ever work for the Tennessee Copper Company in this capacity?

A. A little bit.

Q. Did you ever testify any for them?

A. I would not be positive about it.

Q. Mr. Holt, if you clerk in a store, how is it that you can drop your work and go and work for twenty-one days inspecting smoke injury for this copper company?

A. I stand in with my boss man.

Q. Who is your boss man?

A. L. B. Crawford. I have got a daughter that takes my place when I am out.

Q. Who were with you on this trip of inspection beginning on the 1st of September?

A. On the first part of it, there were M. S. Clayton, Jason Aikins, and somebody else, but I don't remember who it was, now. That was the first two or three days.

Q. Sherman Reese was with you all the time, was he not?

A. No sir.

Q. He was not with you?

A. No sir. We got with Mr. Reese on the fourth, and quit that crew.

A. That is what I am talking about. I thought you said Reese was along?

A. I said he was along in the crew on that trip, but this was when we first started out.

Q. I said, on this trip of 21 days; I want to know who all were with you; of course, I do not mean every minute of the time, but I mean during the time.

A. I told you that Mr. Reese came in on the 4th day of the month, with a crew, and I left this crew we started out with, and went
1618 with Mr. Reese and Mr. Thompson.

Q. Now, the first trip; where did you start and where did you go?

A. We started from Blue Ridge, or I did, and went to Ellijay and met the balance of the boys, and went to Manse Clayton's from Ellijay; and from Manse Clayton's we w*n*et to Jason Aikin's, and took the Hodge slate road and went across the Blue Ridge Mountains into Fannin County, and back and around through that section of country back to Mr. Clayton's that night.

Q. The next day, we went out through by Roy, Georgia and up through Bucktown to a man by the name of Caleb Weaver's, and took the mountain and went to the top of the mountain and went to—I don't know the name of the mountain, but out across to the edge of Dawson County and turned back, and came back to Mr. Weaver's that night and stayed all night. I left the crew there and came to Roy and met another man who went back to my crew, and I went with Mr. Reese's crew, and then I made a trip after we got through with them, started out and went to the Cartecay Post Office and up to Duke Post Office, and up to Sinder, and around that section of the country through there.

Q. Well, now, had Mr. Reese got with you by this time; if not, when did he get with you?

A. He got with me there; I told you I met him.

Q. I didn't understand you. You talk so fast. If you would talk more distinctly, I could understand more easily. Then, when Mr. Reese got with you, where did you go?

A. He was with us on the last part of the trip which I described there.

Q. Well, the first part of that trip, did that carry you east of the railroad or west of it?

A. East.

A. What part of the trip was it that you went into the
1619 Barnes' Mountain section?

A. That was back in Fannin County. That was back northwest from Ellijay.

Q. I know; but I say, what part of your trip was that, the first of the last of the trip?

A. That was along toward the last of it.

Q. That was up toward the 15th to the 20th of September, then, was it?

A. It was the 15th of September when we were over there. I remember that date.

Q. You are not an expert on any kind of plant diseases are you, Mr. Holt?

A. No sir.

Q. You never made any study of them?

A. I studied them a couple of years, but I am no expert at it.

Q. You have made no special study? You don't know those things only just what you see?

A. I have made a study for two years, while I was working in an orchard, I got all the help I could from different journals, farm journals. The State entomologist furnished me books on certain diseases, and I studied them as best I could. Of course, I am uneducated and not learned like some folks are, but I can tell what they are when I see them.

Q. What books did you study?

A. I can't tell you. They were different journals, I told you.

Q. If you studied those books that much, why is it you cannot tell what kind of diseases you have just been talking about?

A. That is more than I can remember. I cannot remember them all.

Q. Why is it, Mr. Holt, that the copper company picked you out to go and do this work for them when you are no expert?

1620 A. I can't answer that question. I don't know.

Q. You don't know how they came to find you?

A. I can't tell you about that.

Q. You didn't volunteer your services to them; did you go and hunt them up and volunteer to go?

A. No, I don't know as I did.

Q. Well, do you know that you did not?

A. Well, they spoke to me about it, and I told them I would go, but I never did go to them, volunteer to go or tell them I would.

Q. Who spoke to you?

A. I don't remember who?

Q. You can't remember who came to you and made the trade with you?

A. Mr. Reese did on that special trip. He hired me to meet him and go with him to a certain place.

Q. He hired you, and he didn't go to see you?

A. Not at that time, no.
Q. Mr. Reese is the regular employee of the copper company?
A. I suppose he is.
Q. And the conductor on nearly all these investigation tours, is he not?
A. I could not say about that. He was on that one.
Q. And the ones you have been with him on.
A. And the ones I have been with him on.
Q. I believe you said that the injury you speak about finding over there in Fannin County was on Barnes Mountain, what is known as Barnes Mountain.
A. A little this side of Barnes Mountain; between Barnes Mountain and Higdon's Store, at different places.
Q. That is west of Epworth about how many miles, or southwest.
A. I'll be dogged if I can tell you.
1621 & 1622 Q. How is that?
A. I don't know. I can't tell you.
Q. About how far south is it from the Ducktown Copper Company at Isabella?
A. I would guess about eight or nine miles. I don't know that it is as a fact.
Q. You were not down about Arnold's orchard and the Hill orchard about May of this year, were you, Mr. Holt?
A. No sir.
Q. And you did not see those orchards in June, soon after May, did you?
A. No sir.
Q. And at no time until in September?
A. I don't think I was there until September.

Redirect examination.

By Mr. FOWLER:

Q. Mr. Holt, how far is that place you thought you saw some smoke injury, from Ducktown, the Ducktown Copper Company?
A. I call it all the same place, that is, from Copperhill; I was going the distance of about eight or nine miles from Copperhill, I think, before I hit it.
Q. Is it about the same distance from Copperhill, as Isabella?
A. No, it is further from Isabella. From Copperhill, we covered everything from that one point.
Q. How far is it from Isabella?
A. I don't know.
Q. Is it still farther?
A. Yes sir.
Q. Now did you and Mr. Reese gather or cut any twigs from those trees in the Northcutt and Arnold orchards?
A. I think we did when he was along; I think we did.
Q. When who was along?
1623 A. Mr. Reese. I think he cut some.
Q. You don't know what became of them?

A. He brought them to Ducktown.
Q. You have not seen them since?
A. No sir.

Recross-examination.

By General DRAKE:

Q. Mr. Holt, if Dr. Hedgecock, a plant pathologist, and an expert on that and kindred subjects, also a government expert on smoke injury, accompanied by Mr. Johnson, a government expert forester, and Mr. Clark, a government expert forester, should have gone over this same territory, or practically the same territory that you did in August of this year, when the foliage was all fresh, or should have been, and in its most vigorous life, and they should testify that smoke injury was evident in all that section, would you then think there was no smoke injury?

A. I would think so, according to my judgment. I have nothing to do with the way they think. The way I see it, there was none there. The frost tint showed a little bit. The effect of smoke is quite a different thing, the way I see it. I think I know what smoke is. I am no expert, though.

Q. What is smoke injury, if you know so well what it is?

A. If I see it on leaves, I can tell you. I have got no education to explain things, but I have got sense enough to know how it is.

Q. If you know how it looks, tell how it looks?

A. It would be hard to do that. I can say one thing, and that is, we have got the best crops we have had in twenty-five years, in my judgment, beans, pease, and all.

Q. In spite of the awful drouth, they had up there all the year?

A. Yes sir.

Q. You have volunteered that statement, without answering
1624 my question, have you not, Mr. Holt?

A. Which?

Q. About having such fine crops up there?

A. I couldn't help it; they are there to show for themselves.

Q. But did I ask you anything about that?

A. No sir, I don't think you asked that, but I answered it.

Q. Why do you volunteer to answer questions you are not asked about?

A. I did it to show you that I am telling what I think is the truth about it.

Q. Isn't it a fact that you are so much interested in this copper company that you want to help them out, and that is the reason that you go on and tell things you are not asked about?

A. No sir, I am not any more interested in the copper company than I am in the citizens.

Q. Please tell us what smoke injury looks like, as nearly as you can describe it.

A. If I had some leaves to show you, I could explain it. It has a brown tinge, a different brown from any other brown

Q. What is the difference between it and frost injury, or Frog-eye, or Aphis, or San Jose Scale?

A. I am not able to explain the difference, but if you bring them before me, I will show you the difference.

Q. But Mr. Holt, you know I can't bring them here, don't you.

A. I don't know.

Q. Then please, in the best way you can, tell me how smoke injury looks to the ordinary eye.

A. I will not undertake to explain.

Q. Well, if you cannot answer that question, please tell us how smoke injury affects the life and growth and vigor of trees
1625 or other vegetable plants.

A. Well, it scorches the young tender buds, is as nearly as I can explain it, and saps the growth of them, seems something like frost, but it is a different thing from frost.

Q. Describe to us, if you can, how the scorching or the burning of the buds and tender leaves, will hinder the growth and development of the trees and plants.

A. It is natural, when you see a thing growing, if it is interfered with, it will be stunted.

Q. Why is sulphur smoke injurious to vegetable life?

A. I cannot answer that.

Q. How is that?

A. I cannot answer that. I don't know.

And further deponent saith not.

B. H. HOLT,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 7, 1914.

[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 230.

Next witness, A. M. JOHNSON, for defendant, in rebuttal, having been duly sworn, testified as follows:

Examined by Mr. FOWLER:

Q. Mr. Johnson, where do you live?

A. In East Ellijay.

Q. How long have you lived there?

A. I have lived on the lot I now live on 24 years.

Q. What is your age?

1626 A. Sixty-five years.

Q. How ling have you been acquainted with that vicinity around Ellijay?

A. I came to the county in 1872, and I stayed there until 1875. I went away and was gone eight years, and I moved back in 1881. Since that time I have lived in the county all the time.

Q. Have you been in Cartecay Valley this summer?

A. In the Cartecay Valley?
Q. Yes.
A. I have been through the entire—I have not been through the entire valley, but I have passed along over a portion of it. I have been at work and have not been over the country.
Q. In what business are you engaged?
A. Building.
Q. Contracting?
A. Yes sir, contracting.
Q. Where have you been at work this summer?
A. I have been in Gilmer County all the summer. I built a building at east Ellijay in the spring, and in the summer at Ridgeway twelve miles west of Ellijay, and I am on a building twelve miles south of Ellijay in the Boilertown district. However, during the months of June and July I was at home all the time; I was at home in East Ellijay up to about May Court, I went then to the west side of the mountain and commenced to build a school house.
Q. In what part of June?
A. I think I left there perhaps about the middle of June.
Q. How close do you live to Mr. Frank E. Shippen?
A. I suppose it is half a mile or less.
Q. Now, has you- business required you to travel between those points considerably?
A. Well, I don't have occasion to go by where he lives
1627 scarcely at all.
Q. I am talking about through that section around Ellijay.
A. Yes sir, from my place to town. I am a mile from the Courthouse—the old town.
Q. Are you in sight of Turniptown Mountain?
A. I can see the south side and the west end, from my home.
Q. Is it in plain view of your home, that portion of it?
A. A portion of the south side and west end, is; I can see the high points very clearly from my home.
Q. Can you see Bush Head Mountain?
A. Not from where I live. I can see it going around towards Ellijay from where I live.
Q. Have you seen it frequently this year?
A. Yes sir. I have seen Bush Head Mountain; that is the mountain around up town.
Q. Do you know Flattop Mountain?
A. Yes sir. I have not been nearer than Ellijay up in that direction; it is quite a ways from Ellijay.
Q. State whether or not you have made any observations through that section with reference to smoke damage?
A. I have not made any investigation, nothing more than I would except being impressed with it generally as I passed through the country.
Q. Have you seen any indication whatever of any smoke injury this year?
A. I have not seen anything that I consider to be smoke injury. I consider the conditions were improved.

Q. What is the general condition of vegetation through all this section that you mentioned?

A. It was very dry in the spring. Corn and crops are very good. I think the corn crops are perhaps better than usual. There is quite a quantity of cabbage and apples that have come on
1628 the market regularly.

General DRAKE: I except to the question and the answer, as not being in rebuttal of the State's evidence.

Q. How have the gardens been this season?

A. So far as I have noticed, I have not seen any trouble except with the Irish potatoes. We did not make any. I think the early Irish potatoes were generally a failure.

Q. Why were the early Irish potatoes a failure?

A. Ours failed because they were planted on the same ground that they were grown in last year, and they were destroyed by the bugs, which was the general complaint, caused by the dry season.

General DRAKE: We except to this question, for the same grounds stated last above.

Q. State whether or not you had a pretty bad drouth up to the middle of the spring?

A. Yes sir.

Q. Have you seen any indication on the forest leaves of any damage?

A. I have not seen any discoloration this year, in Gilmer County, on the roads.

Q. Have you seen much smoke in there?

A. I have occasionally seen some smoke in the County. I have not seen it this summer I don't think, any worse than I have other times. Occasionally we have had some smoke in the County. I don't think it is any worse this summer than it has been for quite a while, that is, that I have noticed.

Q. Have you seen any smoke of much consequence in Ellijay Valley?

A. No sir. At the place I live, and where I worked in the spring, there is a mountain between me and the valley, and I did not have a clear view of Ellijay Valley.

Q. Have you been around in Ellijay?

A. Yes sir. I have passed a great deal through Ellijay.
1629 Q. Have you noticed any injury around Ellijay from smoke?

A. Any injury?

Q. From smoke, any injury around Ellijay?

A. I have not noticed any, that I thought was *dor* to smoke in the Valley, at all.

General DRAKE: We except to all this evidence as not being in rebuttal of any evidence introduced by the State of Georgia.

Q. Are you fairly familiar with the conditions up through Gilmer County, Georgia, and Fannin County?

A. I am better acquainted with the conditions in Gilmer County than I am in Fannin County. I know generally the conditions in Gilmer County. I think I ought to know them.

Q. I am going to read you a short article which appeared in the Atlanta Constitution October 27th, as follows:

"Gilmer and Fannin Full of Prosperity. Both Counties Raise Plenty of Food Stuffs, But No Cotton."

"Gilmer and Fannin Counties are two places where the cry of hard times has not penetrated, according to Hon. Herbert Clay, Solicitor General of the Blue Ridge Circuit, who was in the city Monday. And there is a very good reason for this gratifying state of affairs. Gilmer and Fannin Counties raise no cotton, but do raise beef cattle, hogs, hay corn, and country produce of all kinds for which already market is already found. "Gilmer and Fannin Counties are literally bursting with prosperity," said Mr. Clay. "In the little town of Ellijay, in Gilmer County the merchants are actually discounting their bills, and there at the present time nine brick stores — being erected in that thriving little settlement. "There is no cotton raised in either Gilmer or Fannin County and the farmers are not burdened with any commodity for which they have not a ready market. They raise quantities of produce, such as butter, and milk and eggs and chickens, which alway- find a quick sale.
1630 They have nor shipped any hogs, but have raised enough for their own consumption and their smoke houses are filled with meat for next winter. I have been pretty well over both Counties and I have heard no word of hard times. On the other hand, I have seen unlimited signs of prosperity. The answer to this, of course, is that they raise no cotton, but do raise the things for which there is alway- a ready market and which they can consume at home. The lesson of Gilmer and Fannin Counties is a striking one at the present time."

State whether or not, to your personal knowledge those conditions do prevail throughout Gilmer County?

A. Taking the county generally over, I think it is in a fairly good condition.

General DRAKE: I except to that question and answer, and also to the article read into the record purporting to come from the Honorable Herbert Clay, for the reason that it is irrelevant, immaterial, and not in rebuttal of anything in this law suit, and for the further reason that Mr. Clay is one of the most active politicians in the state of Georgia, and takes every opportunity to compliment everybody and everything he comes across.

A. (cont'd). With regard to conditions now and six or seven years ago, this year farmers are not buying any corn. In 1907, I think it was, we bought some twenty thousand bushels of corn which was shipped to the County. I do not know that there has been any corn shipped to the county this year. The Corn Club boys have been at work, they are putting a little more life into the farmers, and

they are making a little more corn than usual. I think we have a crop this year that will make a better crop than we have made since I have been in the County.

Cross-examination.

By General DRAKE:

Q. Mr. Johnson, you are one of the regular standbys of
1631 the copper company when they need evidence, are you not?
A. No sir.

Q. Have you never testified for them before?

A. Yes sir.

Q. You have gone out and gotten up evidence for them, have you not?

A. No sir, I have not.

Q. Why did you pull out that article which was read into the record by General Fowler a little which ago, and hand it to him, when he had not asked you anything about it?

A. It was handed to me this morning, and I saw they were looking for it.

Q. You were willing to volunteer that, were you not?

A. Well, I supposed they wanted it.

Q. But no body ever asked for it did they?

A. They were asking each other for it.

Q. You have worked for both the Tennessee and Ducktown Companies?

A. No sir, I have not.

Q. You have worked for the Ducktown Company?

A. I did work for the Ducktown Company a good many years ago, a few days' work.

Q. I mean in the capacity of investigator?

A. No sir, I never worked for the Ducktown Sulphur, Copper and Iron Company in my life as an investigator.

Q. Have you ever worked for the Tennessee Company?

A. Yes sir, I have for the Tennessee Copper Company.

Q. How many times have you been sworn as a witness in these cases for either company?

A. In Court?

Q. In any Court?

A. I was at Chattanooga, I reckon, in two hearings in Chattanooga, and I have made one or two other statements; I don't remember just now how many.

1632 Q. You made affidavit for them away back in 1906, did you not?

A. I think I signed an affidavit in 1905 or 1906.

Q. That was when they were getting up the original case, and you swore in that case there was no damage then, did you not, that you saw?

A. In 1905? I don't remember.

Q. Don't you know that you swore for the company in that affi-

davit, and swore that there was no damage then that you could see, just like you have sworn today?

A. In 1905?

Q. When ever that was.

A. Do you mean an affidavit that I made for the Tennessee Copper Company, or for——

Q. The companies, both of them, in this case.

A. I never made any affidavit for the Ducktown Sulphur, Copper and Iron Company, in any case that I know of.

Q. I am asking you about that affidavit that you did make in 1905 or 1906, that you have just said that you made; didn't you swear in that affidavit there was no damage?

A. I don't remember of making one that early; I don't have any recollection of making one that early; I never made any investigation——

Q. Didn't you just say a while ago that you thought it was in 1905, when I asked you if, in 1906, you did not do it?

A. I signed the statement that Mr. Shippen presented to me in about 1905. I do not remember that I made any affidavit for the company that early. I do not remember if I did.

Q. When did you make that affidavit for the companies?

A. It was in 1908 or 1909, as I remember. That was the first investigation I had ever made.

Q. Well now, in 1908 or 1909, you swore that you could not observe any damage?

1633 A. There was no discoloration in one of those years. It was either in 1908 or 1909. We went upon the idea when there was diccoloration there was damage, and if there was no discoloration there was no damage.

Q. You do not qualify as an expert on smoke?

A. No sir, by no means.

Q. All you know, you base on discoloration, and you never saw any?

A. I view it as a citizen would those things, from a practical standpoint.

Q. Well now, Mr. Johnson, if a lot of your neighbors such as the Hensons who lives — Hill's land, and Mr. Arnold's just east of you two or three miles, and Mr. Frank Ship- and Will Shippen, and Witherow and John H. Clance, if those men were to swear that they saw smoke in that orchard settle down there for a day, and Mr. J. T. Deweese, and it was so bad that you could see it and smell it, and it hung there for a day or longer and after it had lifted in a day or two the leaves began to crimp up on the edges, and the apples all shrivelled up and fell off in a few days, would you think that was caused by smoke injury?

A. Caused by smoke?

Q. Yes.

A. I think they would be sincere in their statements.

Q. Would you think that would be the cause of the apples falling off?

A. If I had seen nothing anywhere else, I would think a great many things. A great many things occurred down there beside the smoke. I saw the same conditions existing in other places.

Q. If you were to see the conditions I have described, you attribute that to smoke, would you?

A. It might be that I would, if I was to see them.

Q. If these men were to swear that they saw those conditions, would you attribute them to smoke?

A. I would think they were sincere in it.

1634 Q. Won't you answer the question, and say that you would attribute that injury to smoke, if that orchard?

A. It is reasonable that they would be correct about it.

Q. I am not asking you as to whether their statements would be correct, but I am asking you if you would attribute the injury to the orchard to smoke, or would you attribute it to insects if the condition should be as I have described them, there?

A. The smoke might contribute to the injury, there is no doubt about that.

Q. Then you will not make it any stronger than it might contribute?

A. Yes sir, it might contribute to the injury; it might be a part of the injury. It might perhaps be the major part of it.

Q. You have got a son-in-law named Pickett, have you not?

A. Yes, sir.

Q. I will ask you if he has an orchard right there in east Ellijay?

A. Yes sir, it is right in front of my door across the street.

Q. Have you ever examined his orchard?

A. I have been about it and have pruned it sometimes in the spring for him.

Q. If your son-in-law would say that he had seen smoke in there and that leaves soon thereafter crimped up, and the apples shrivelled and fell off, would you think that that was smoke injury?

A. I would think he was sincere in his statement, and if it was there and remained there long enough it would do damage.

Q. Please answer me, about what you think of the real facts of the injury.

A. If he stated that he saw smoke there, is that the question?

1635 Q. Yes sir.

A. I would think at least that he was sincere in it, and that perhaps his injury is a fact.

Q. That perhaps it would be smoke?

General FOWLER: The defendants object to any questions with reference to Pickett's orchard, because there is no evidence which has been introduced by the State of Georgia with reference to any statement made by Pickett, or any thing with reference to his orchard.

General DRAKE: The question was asked, and I insist it is competent, for the reason that this witness is on cross examination, and I am only testing his knowledge and his fairness as a witness. For that purpose only was the question asked.

And further deponent saith not.

A. M. JOHNSON,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 7, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 260.

Next witness, J. C. AIKINS, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by General FOWLER:

Q. Where do you live?
A. I live in Gilmer County.
Q. Whereabouts in Gilmer County?
A. I live in the eastern part, near Ralston Post Office.
1636 Q. How long have you been living there?
A. I have been living there 36 years.
Q. Near what mountains are you?
A. I am near the Stovall Mountains, and Bald, and Turniptown in there.
Q. Are you familiar with Turniptown Mountain?
A. Yes sir.
Q. How near do you live to it?
A. It is some eight miles from Turniptown Mountain to where I live.
Q. Are you familiar with Cartecay Valley?
A. Yes sir, on the Cartecay side, up the river.
Q. How near do you live to Cartecay Town?
A. It is a right smart little piece down the Valley the way the road goes, we have to go around the mountain to get there. It is about twelve miles.
Q. Have you traveled through there this summer?
A. Yes sir, I have been out there this summer.
—. ——.
A. I was out there some time back.
Q. How did you happen to be there?
A. I was looking for some stock I had out there, when I was out there last.
Q. Have you been in Turniptown Mountain this year?
A. I have been on the mountain between Turniptown and where I live on the Creek. I live on Turniptown Creek, and it heads up opposite; I did not go that way. I have been on the mountain between the two creeks.
Q. How high a mountain is that compared with Turniptown?
A. It is about the same height.
Q. How near is Turniptown Mountain?
A. There is a creek that runs between the two mountains.
Q. Is it a part of Turniptown Mountain?

A. Yes sir, it is.

1637 Q. Have you given attention to vegetation and forests in that country?

A. It has been al- right as far as I have seen.

Q. I say, have you given any attention to it?

A. Yes sir, I have noticed it.

Q. What has caused you to go through the forests this summer; what have you been doing?

A. I worked a while with Mr. Quintrell, but we did not go on this party. I have worked in parts of the country with him.

Q. You mean for the Ducktown Company?

A. Yes sir.

Q. What were you doing for them?

A. We were just prospecting the timber.

Q. When was that?

A. That was the first of September.

Q. Who was along at the time?

A. M. S. Clayton, and Mr. Quintrell, and a man by the name of Addington—Josephus Addington.

Q. How many days did you spend?

A. We worked nine days, we were out then, but Sunday we laid off.

Q. Through what section did you go?

A. We went up east of me there, across to the line on the Blue Ridge, to the County line, and then took the mountain back a piece, and then came down and went into what is called Bucktown, and worked out there a while, and then took what we call the Buncombe Mountain and came back down through the valley and went out by Roy Post Office.

Q. Over how many miles did that take you?

A. Well, I suppose we were about 20 miles a day, that we traveled.

Q. Did you notice the timber pretty carefully?

1638 A. Yes sir, we noticed it carefully.

Q. Were there any crops in the neighborhoods through which you passed?

A. Yes sir.

Q. Did you notice the crops?

A. Yes sir.

Q. Was that whole territory through which you passed in Gilmer County?

A. Yes sir.

Q. Have you always lived in that County?

A. I have lived in that County ever since I was about six years old.

Q. Are you familiar with injuries from smoke fumes?

A. Yes sir.

Q. State whether or not on your trip you saw any indications of damages this year from smoke fumes?

A. I did not see any signs at all.

Q. Did you notice the crops?

A. Yes sir, I noticed the crops and the gardens.

Q. What is the condition of the crops through this country?
A. On all of my land, they are as good as you ever saw them. They were injured early by the drouth some.
Q. Did you see any gardens?
A. Yes.
Q. What is the condition of the gardens?
A. The gardens were doing fine, doing well.
Q. Did you see any signs of smoke injury in any of the gardens?
A. No sir, I never saw any signs.
Q. Did you see any signs on any of the crops?
A. No sir, on none of the crops.
Q. What kind of crops did you notice?
A. Corn and pease and beans, and such as that.
Q. Did you see any fruit trees?
1639 A. Yes sir, I saw some.
Q. What kind of a fruit crop is it this year down there?
A. Well, there are some orchards that are pretty full, you know, and in some places bit. W-ere the orchards are on good land, they are good, and the fruit appears to be pretty good, and where it is on thin land, and poor, you know, the trees are going down.
Q. Did you see any signs of smoke injury on any fruit trees?
A. No sir, I never did.
Q. Did you pass the places of any persons who had been witnesses for the State of Georgia in this case?
A. Why, yes, we passed through some of them.
Q. Do you remember who they were?
A. Well, there was Mr. Evans, and Mr. Teemes.
Q. Who else?
A. I really don't know who have been here. We passed and saw a good many. I don't know who——
Q. Did you go by Northcutt's orchard?
A. No, we never got up on that; we only went to the end of it; we did not go on his, and we never got to examine it good. What we saw of it was all grown up and had not been cultivated.
Q. Did you make an examination of the forest and crops around Mr. Teemes?
A. Yes sir.
Q. And Mr. Evans?
A. Yes sir.
Q. Did you find any indications of smoke damage around there?
A. I don't think we did. Mr. Evans had a patch or corn that sorter had the rot, or something; I don't know what it was.
Q. Something like smut?
A. Something that way.

General Drake: We except to the question, for the reason
1640 that it suggests the answer, and for the further reason that it is not in rebuttal.

Cross-examination.

By General DRAKE:

Q. How many times have you been out on these scouting trips for the copper company?
A. Sir?
Q. How many times have you been out on these scouting trips for the copper company?
A. I have never been out but the one time.
Q. Who all was with you on this trip?
A. The men I told you about.
Q. Was Mr. Sherman Reese there?
A. No, he was not with us.
Q. Was Mr. Holt?
A. No sir. He was with us one day, and then went in another crew.
Q. You said frost killed some apples up in that country?
A. Yes, it did in the spring.
Q. It did not kill any along about the last of May when they were about as big as hen eggs, did it?
A. I don't know. I don't suppose it did.
Q. Well, now, Mr. Aikins, you know J. W. Henson, don't you, who lives on Arnold's place?
A. Yes, I know him.
Q. And George Henson who lives on Mr. Hill's place, and Rogers, who lives on Mr. Hill's place?
A. Yes sir.
Q. And Sherman Henson?
A. Yes sir.
Q. You know all of them?
A. Yes sir.
Q. And John Clance? You know him?
1641 A. Yes sir.
Q. And you know J. T. Deweese?
A. Yes sir.
Q. If all those men should come up and swear that smoke came in there in May and got into Mr. Arnold's orchard and settled down so bad that you could see it, and smell it, and it was so bad it looked like the woods were on fire, and it smelt like sulphur smoke, and then in a day or two after that the leaves crimped up on the edges like they were burnt, and all the fruit practically fell off in two or three days, would you attribute that to smoke or frost, if there had not been any frost?
A. There was no frost then of course.
Q. Would you think it was caused by smoke?
A. I don't know what it was caused by. I never saw it.
Q. Would you think it was caused by smoke?

General FOWLER: I object to that testimony. It is wholly irrelevant what the witness thinks, from the state of facts described by counsel.

General DRAKE: I insist that it is competent, because this witness has undertaken to qualify and to know what smoke injury is, and undertaking to testify as to the absence of smoke injury in all that country. The question is asked for the purpose of testing his knowledge on smoke injury.

General FOWLER: The witness expressly stated it was not smoke injury.

Q. Would you attribute that to smoke injury, if a thing like that should happen?

A. I cannot tell. I never saw that.

Q. You would have to see it?

A. Well, it would be better.

Q. If you saw a thing like that, would you say that the smoke caused it?

1642 A. Yes, if I could see it, and it showed, I would believe it.

Q. You would believe what these men would swear?

A. Well, I suppose they would swear the truth.

Q. Aren't all these men good citizens?

A. I think they are.

Q. Are they not among the very best citizens of Gilmer County?

A. Well, they are just a common average, I suppose.

Q. Will you say that J. T. Deweese is not above the average citizen in that country?

A. I don't suppose he is. I guess he is about the common citizen.

Q. And Sherman Henson?

A. Sherman Henson is a good man.

Q. Aren't both of those men above the average in intelligence, honor, and high standing, of the citizenship in that community?

A. Well, I don't know that they are above, sir.

Q. Isn't Mr. Deweese a school teacher, and has he not been teaching school and farming there for the last twelve or fifteen years?

A. He has been there some eight or ten years I reckon. I don't know just how long he has been in there.

Q. Is he not the county president of the Farmers' Union, in that County?

A. Well, sir, I don't know about that.

Q. You don't know that?

A. No sir, I don't believe it, and I don't know who is the president.

Q. You have got a son who is an employee of a big grocery company in Copperhill, have you not?

A. I have got a son there that owns stock in a whole

1643 sale company.

Q. He has stock in what?

A. In a whole sale house.

Q. In a whole sale grocery house?

A. Yes sir.

Q. That is located in Copperhill?

A. Yes sir.

Q. And he lives there?

A. Yes sir, he lives there.

Q. And works for that company he is a stockholder in?

A. Yes sir, he works there.

Q. Does he not own a large amount of property there—real estate?

A. He has got some. I don't know exactly how much he has got.

Q. Don't you know he has got a good deal?

A. Well, he has some buildings there.

Q. Isn't it practically all the property he has invested in Copperhill, Tennessee?

A. Well, not all.

Q. Practically all, I said.

A. Well, I guess the majority of it is there.

Q. Is that the same company that Mr. Vestal owns stock in over there?

A. I think he has got a share in it.

Q. A share?

A. Yes sir.

Q. He don't work for them, though, does he?

A. Who?

Q. Mr. Vestal; he don't work there for them?

A. I don't know whether he works there or not.

Q. Are you an expert on smoke injury, Mr. Aikins?

A. Why, no, I don't suppose I am.

Q. You don't know?

1644 A. I know when anything is killed.

Q. You don't know the fact that it affects the leaves, or the leaves of a tree, do you?

A. Yes. I have noticed it around Ducktown when it used to kill them there.

Q. Do you know how it injures a tree, the effects, the first effects, the second effects, and so on?

A. It generally commences on the top leaves and kills the leaves.

Q. It kills the leaves?

A. Yes, sir, that is my experience with it.

Q. How do the leaves look?

A. They sort of crisp up and look white.

Q. Then later, do they turn brown?

A. Well, they shed off after a while.

Q. They will shed off by the smoke?

A. Yes, they will do that.

Q. If injury occurs, if a bad lot of smoke comes in in May and kills the leaves they will fall off before fall, will they not?

A. I should think they would fall off sooner.

Q. Have you known of any falling off in July?

A. I have seen them around Ducktown there, years ago (fall off in July).

Q. Have you not seen them in Georgia?

A. No sir, I have not seen them in Georgia; I have not seen the leaves bit in Georgia.

Q. You have never seen a bitten leaf in Georgia?

A. No sir, I never have.
Q. Did you sign one of those affidavits away back yonder in 1906?
A. What sort of an affidavit?
1645 Q. For the copper companies?
A. For which?
Q. For the copper companies?
A. No sir, I never signed a paper concerning it in my life. I have never been asked to, and never signed it.
Q. I didn't know. I wanted to find out.
A. Well, you know now just how it is.

Redirect examination.

By Mr. FOWLER:

Q. Has or not Mr. Vestal had an interest in that wholesale concern in which your son is interested?
A. I don't know how much he has. Of course he has got a right smart.
Q. Mr. Vestal is now president?
A. Yes sir.
Q. And has he not been prompting counsel on the other side while you have been testifying?
A. Yes.
And further deponent saith not.

JASON AIKINS,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 7, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage 280.

Next witness, M. S. CLAYTON, for defendant, in rebuttal, having been duly sworn deposed as follows:

1646 Examined by General FOWLER:

Q. Where do you live?
A. I live in Gilmer County, near Ellijay.
Q. How long have you lived in Gilmer County?
A. I was born and raised there.
Q. How old are you?
A. Fifty-six.
Q. Whereabouts do you say you lived in the county?
A. East of Ellijay, four miles and a half east of Ellijay.
Q. What is the name of your Post Office?
A. Pike.
Q. Are you familiar with the Cartecay Valley vicinity?
A. Yes sir.
Q. Are you familiar with the Turniptown Mountain?

A. Yes sir.
Q. How close do you live to Turniptown Mountain?
A. Well, do you mean Turniptown Mountain or Stovall Mountain?
Q. Yes, both of them; they are right side by side.
A. I am against the Stovall Mountain. I am about a mile and a half from the Arnold orchard.
Q. Have you examined the Arnold orchard this year?
A. Yes sir.
Q. When were you through, or have you been through the Northcutt orchard this year?
A. Yes sir.
Q. When were you through them?
A. It was in August, sometime in August; I don't recollect the date.
Q. At whose instance was it that you went through there?
A. Mr. Reese's.
Q. Was he along with you?
A. No sir.
1647 Q. He asked you to go see it?
A. Yes sir.
Q. To what extent have you examined the trees in those two orchards?
A. I was in the Northcutt orchard twice, and in the Arnold orchard twice before this season, I believe.
Q. Have you had any experience with fruit trees?
A. Yes sir.
Q. To what extent?
A. Well I put out an orchard about eighteen or twenty or twenty-five years ago, and I have been putting out orchards for the last twenty-five years; I have been in the orchard business.
Q. Have you been growing fruit for the last twenty-five years?
A. Yes sir.
Q. I wish you would describe what you found the condition of those two orchards to be?
A. The condition of the orchards?
Q. Yes sir.
A. Well, I found them in pretty bad condition.
Q. In what respect?
A. Well, It was for the want of cultivation, and then there was a lot of scale in it, and borers; we found a lot of dead trees, we found lots of trees dead in the orchard.
Q. What appeared to have been the cause of their death?
A. The trees that were really dead was caused, I think, by borers; and then there were a lot of trees that were not really dead, they were dead to some extent, and they were killed by scale, that is as far as they were killed; they were not finally killed, but——
Q. Did you see any frog-eye in the orchards?
A. Yes sir, I saw some of them affected with frog-eye.
1648 Q. How was the orchards with reference to cultivation?
A. They were neglected.

Q. How was it with reference to cultivation; had they been properly cultivated or not?

A. No sir.

General DRAKE: We except to the question as putting the answer in the mouth of the witness.

Q. How far are those orchards from you?

A. It is about a mile and a half to the Arnold orchard, and Northcutt's orchard would be a couple of miles, a half a mile above it. It is right adjoining the Northcutt orchard.

Q. In what direction is your orchard from this orchard?

A. From my orchard out there?

Q. Yes.

A. It is northwest from my place to the Arnold orchard.

Q. Has your orchard been at all affected this year by smoke fumes?

A. No sir.

General DRAKE: We except to that as not being in rebuttal.

Q. State whether or not you found any evidence in either the Arnold or Northcutt orchards of injuries from smoke fumes?

A. Not any.

Q. Is there a man by the name of Henson, who has an orchard there, or not, or did he work in one or the other of these orchards?

A. Sherman Henson is supposed to control the Arnold orchard, but Asbury's orchard, I don't remember being in his orchard; we were at his place.

Q. It is the Arnold orchard that Asbury was looking at, is it?

A. Yes sir.

1649 Q. State whether or not you have observed in your neighborhood any evidence of smoke injury to forests, this year?

A. Not any.

Q. Have you noticed the crops any?

A. Yes sir.

Q. What is the condition of the crops through that section?

A. Good, they are good crops.

Q. How do they compare with other seasons?

A. They are a great deal better, I think; I think our crops are a lot better than common.

Q. Have you observed any signs of smoke injury to any of the crops through that section?

A. No sir, not any.

Q. Have you been about Ellijay much this year?

A. Yes sir.

Q. Have you given any attention to the crops around there?

A. Yes sir.

Q. What is the condition of the crops there?

A. It is good as far as I have noticed.

Q. Did you see any sign of any smoke injuries to any of those crops?

A. No sir.

Q. How is your apple crop this year?
A. Pretty fair; mine is not as good as my brother's are right at me. We both live on the same lot of land.
Q. How many wagon loads have you marketed so far?
A. I think my book shows I have hauled 40 or 41 loads since the first of August.

General DRAKE: I except to the question and answer as being original evidence, and not in rebuttal of anything proven by the State of Georgia. This orchard has not been in evidence until now.

Q. How many trees have you got in your orchard?
1650 A. In my orchard?
Q. Yes.
A. Well, I claim about 1,800 but I could not say I have got that many.
Q. How many has your brother?
A. I declare I don't know. I think he claims about four thousand or six thousand, right along there somewhere.
Q. That is J. W. Clayton, who has already given his testimony?
A. Yes sir.
Q. State whether or not you went with Mr. Aikins through parts of Gilmer County?
A. Yes sir.
Q. Through what sections did you go?
A. Well, we went in—I live in the sixth—we were in the Seventh, out to the Fannin County line; that was northwest, and then we went due east, and on around south and west and northwest. I was not in the north part of the County.
Q. Did you go through the northern section of Gilmer County?
A. No sir. The northern section, that is northwest, away in that section, but due north, I was not there.
Q. You went up to the Fannin County line?
A. Yes sir.
Q. Through what mountains did you pass?
A. I crossed the Blue Ridge going east, and up to the Springer Mountain, due east, and the McClure Mountains on southeast.
Q. Did you pass Bush Head?
A. No sir, I never went up there.
Q. Or Flat Top; have you not seen that?
A. No sir, I did not go up there.
Q. About how much territory did you cover this year, how
1651 many miles?
A. Well, I declare I don't know. I think we traveled ten days and probably averaged twenty or twenty-five miles a day.
Q. Did you make pretty careful observations as you went along?
A. Yes sir, we were out for that purpose.
Q. State whether or not you saw any evidences whatever of smoke injury on the trip?
A. Not any at all.
Q. Did you notice the crops, as well as the forests?
A. Yes sir.

Q. Did you notice any injury to the crops?
A. Not any.
Q. Did you make any observations through the mountains last year?
A. Yes sir.
Q. In 1913?
A. In Gilmer County?
Q. Yes.
A. No sir. I live in the county; of course I travel backwards and forwards. I worked in Fannin County last year.
Q. Did you make any observations in Fannin County in 1913?
A. Yes sir.
Q. Over what sections?
A. Well, I was in the twenty-seventh and 9th and 8th and 11th. I was some in Gilmer County, too; I was in the 28th and some in the 6th and 1st. We went in the 6th and 1st, on a lot and a half, I believe.
Q. Who was along at that time?
A. Mr. Higdon. That is, I went on a survey. Mr. Ray Higdon worked with me on the inspection. Mr. Reese, Sherman
1652 Reese and I, could not give you all the men's names, I don't guess.
Q. For what purpose were you making that inspection?
A. For smoke damage.
Q. Did you see any evidences of smoke damage on that trip?
A. Yes sir, I think I saw a little up about Epworth school building, in the eighth, I think that was.
Q. Where abouts was it you saw that?
A. About Epworth School building, near the State line.
Q. That was last year?
A. Yes sir.
Q. That was the only place you noticed it?
A. Yes sir.
Q. Were you engaged in assisting in making a survey of the Shippin and Vestal lands?
A. Of Vestal's, not Shippen's; I don't think his were in it.
Q. Was that what you were doing on the occasion that you mention?
A. I was working for the Ducktown Sulphur, Copper and Iron Company at Isabella on the Vestal lands.
Q. How long were you working for them at that time?
A. I think I got in there 46 or 47 days, is my recollection.
Q. In passing through the forests, did you give careful attention to them?
A. Yes sir.
Q. Were you instructed to do so?
A. Yes sir.
Q. And you say the damage you have mentioned was the only damage you have noticed from smoke during the entire trip?
A. I was 40 some odd days on the survey and twenty-one on the inspection, I think.

Q. Then after you spent about how long on the inspection
1653 in addition to these 45 or '6 days.

A. Twenty-one days, I think, I got in on that inspection.

Q. Did you or not pass through a large part of North Georgia on both trips, including both trips?

A. Yes sir. Well, I was over a good portion of Gilmer County and Fannin County.

Q. Have you seen around Ducktown there a good deal of smoke injury?

A. Yes sir.

Q. And you are familiar with its appearance?

A. Yes sir.

Cross-examination.

By General DRAKE:

Q. You are a regular professional witness for these copper companies, are you not?

A. Well, I think this is the first time that you have been in the courts?

Q. You have been working for them and making these inspection tours for them, have you not?

A. Yes sir.

Q. Do you know why it is that the Ducktown copper company goes right past J. T. Deweese's and these Henson's that we have been talking about and John Clance's, who live fronting north, and jumps right over the mountain on the south side and gets you and your brother for witnesses? Do you know why that is?

A. If they get us as witnesses?

Q. Why they go across on the south side of the mountain to get their witnesses, and do not get them of the north side?

A. No sir, I can't tell you about that.

Q. You are on the south side of the mountain, are you not?
1654 A. Yes, I am on the south side from the Arnold orchard.

Q. And the Arnold orchard and the Northcutt orchard front north, do they not?

A. Yes sir.

Q. And toward these copper companies, and yours is on the opposite side from them?

A. Yes sir.

Q. Well, you are an expert on tree diseases, are you?

A. No sir; No sir.

Q. You do not qualify then as an expert?

A. What do you say?

Q. You do not qualify as an expert?

A. No sir.

Q. You don't know what causes frog-eye, do you, in apples?

A. No sir.

Q. Do you know enough about injury to apple trees to know that if anything could injure the leaves and cause a portion of them

to fall off and weaken the vitality of the trees, that it would cause insects to take hold more than it would in a vigorous, healthy tree?

A. Well, I don't know whether I understood you just right or not.

Q. What I mean is this, Mr. Clayton: If a tree for any cause should be injured, would it not make it less apt to resist attack of any kind of an enemy?

A. Well, I should think so.

Q. And if smoke should come along and settle into an orchard and kill a part of the leaves and a big part of the apples, and thereby weaken the vitality of the tree, would it not be calculated, if there was any San Jose Scale in the country, to make it more susceptible to that injury and take hold easier than it would if it was vigorous and none of its vitality weakened?

A. Well, that might be so.

1655 Q. Do you know what causes San Jose Scale?

A. Well, no sir. I just know we have got it in our orchards, and I do not know where—Well, I have read and heard where it originated, but I cannot tell you now.

Q. You and your brother have raised good crops of apples and especially your brother, in spite of that disease, have you not?

A. Yes sir. Well, he did. He has got the advantage of me. He sprayed a good deal more that I did. I left off the spray. I used to think the smoke was hurting it until we went to spraying, and since then I have decided it was something else.

Q. And Mr. Arnold has sprayed, and Mr. Hill has sprayed regularly, this summer, have they not, or did until they lost their apples?

A. Yes sir, he sprayed, or they claimed they were going to. I was not there when they did the spraying.

Q. You did not see it?

A. No sir.

Q. If smoke was to settle down in Mr. Arnold's orchard in May and you could see it like the woods were on fire, and you could smell it so bad it would make you sneeze, with sulphur, and a few days thereafter the leaves crimped up like they were burnt or frost bitten almost and the apples began to shrivel, and practically all of them fell off in the course of a few days, would you think it was smoke that caused that?

A. No sir; I would think that was scale, or something else. I was in the orchards and saw it there was some of those trees that were badly affected, and if there was another tree right by them injured with smoke, if it would get one of those trees it would get the others.

Q. Do you mean to say that scale will jump into an orchard and in one day kill all the fruit and leaves in that orchard? Is

1656 that what you mean to say?

A. No sir, it did not do mine that way.

Q. Then if it killed Mr. Arnold's orchard practically in one day, would you say that it was the scale?

A. It has been working on it for——

Q. Answer the question, please, sir; would you say it was scale that did that in one day, if all the apples fell off in one day?
A. No sir.
Q. It would not be caused by the scale would it?
A. No sir, it would not be caused by the scale.
Q. It would not be caused by any other insect or disease or fungi, if it did that in one day?
A. But it is not killed.
Q. I am asking you about its effects. I am asking you if that condition existed, was it any disease of the apples that caused it?
A. Nothing that I know of.
Q. Well, what does smoke injury look like?
A. Well, It will commence at the top of a tree; that is the way I locate it; and it will kill it down part of the way and leave the dead limbs and twigs.
Q. I did not mean the appearance after it is killed, Mr. Clayton; I mean the first effects of the smoke. How does it appear on the foliage?
A. It browns the leaves, is the way I find it.
Q. Does it not have the effect of first burning the edges and causing the edges of the leaves to crimp?
A. I don't know whether I saw it when it was first done but I found it after it was done.
Q. Have you observed this effect of it: that after it has browned the leaves in the spring time they will fall off in July or in the early summer?
1657 A. I can't tell you about that.
Q. Did you not see them around Epworth last year, where the leaves had fallen off in July or August?
A. No sir.
Q. When were you over there?
A. It was in October.
Q. Frost, then, had fallen while you were out on that trip?
A. It had done frosted.
Q. It had frosted?
A. Yes sir.
Q. If there had been fresh bitten leaves in June, July and August of last year, you would have seen them in October of course, if those leaves had fallen off?
A. Well, I don't understand that.
Q. If the leaves were bitten in the spring or summer of last year and had fallen off, of course you could have seen them in October when you were down there?
A. No. No.
Q. Where do you get your familiarity or knowledge of smoke injury?
A. I got it about Ducktown.
Q. And what you saw there last year on that trip?
A. Yes, and for several years, this year and last year.
Q. This year and last year?
A. Yes. I did not see any signs that I know of. I ain't been to

Ducktown. I came through the other day; I just came on the train, and that is all the smoke signs I saw were near Ducktown.

Q. You testified how many times in Chattanooga in this same business?

A. Twice, I reckon.

Q. And then this time is the third time, and the only time?

1658 A. Yes sir.

Q. Do you know John Clance, J. H. Clance?

A. I know John.

Q. Do you know Sherman Henson and George Henson?

A. Yes sir.

Q. And Asbury Henson?

A. Yes sir.

Q. And that Rogers that lives *of* Hill's place, the Rogers who lives on Hill's place?

A. Which one?

Q. J. S.

A. John Rogers?

Q. Yes sir.

A. Yes sir, I know him.

Q. Do you know J. T. Deweese?

A. Yes sir.

Q. And Frank Shippen, do you know him?

A. Yes sir.

Q. And Will Shippen?

A. Yes sir.

Q. Do you know their general character?

A. Well, not for certain I do not. I know them.

Q. Do you know how they are held in the community, generally speaking?

A. Yes sir.

Q. Are they good citizens?

A. Well, as far as I know, I reckon so.

Q. You would believe them on oath, would you not?

A. Part of them.

Q. Which ones that I have named is it you would not believe? Please tell me which one of those men you would not believe on his oath. Answer the question, Mr. Clayton.

A. Well, I guess in common things I would believe them

1659 all, I reckon, but——

Q. You would believe them all? Do you not know that Mr. J. T. Deweese is county president of the Farmers' Union?

A. He is said to be, I don't know it. He is said to be.

Q. And don't you know he is one of the best citizens in that country?

A. No sir, I do not know it.

Q. Don't you know that he is a good citizen, and held that way by the community?

A. Well, as far as I know.

Q. Don't you know that Sherman Henson is?

A. Yes sir.

Q. And Asbury Henson?

A. Asbury Henson is all right, as far as I know.

Q. Then you say you would believe them all on oath, do you? You say you would believe them all on oath?

A. In some things I would, and in some I would not.

Q. Please name the ones you would not believe on oath on some things. Tell me which one of those men you would not believe on his oath.

A. (No answer.)

Q. His name.

A. Do I have to?

Q. I think so, Mr. Clayton. Answer the question.

A. Well, on certain grounds, I will tell you, some of them I would not believe on oath.

Q. Name which you would not believe.

A. I would not believe Will Shippen on his oath.

Q. What other one would you not believe, besides Will Shippen?

A. Nary one of them.

Q. Why would you not believe Mr. Will Shippen?

A. I have heard so much said about him. I said, I put
1660 conditions in my answer about Mr. Will Shippen. I said according to what was said, I have heard him swear, and heard what people said about him.

Q. On what line, now, Mr. Clayton?

A. Well, different lines; reports and law suits and one thing and another.

Q. And about smoke?

A. No. I leave smoke out.

Q. Would you believe him on his oath about smoke injury?

A. Not according to what people say. I don't know anything about the facts.

Q. Don't you know it is a fact that a great many of them would not believe you on that subject down there?

A. That is al- right.

General FOWLER: I object to the question, because it is wholly incompetent.

Q. Isn't it a fact, Mr. Clayton, that you are so wrapped up in this copper company, that you have worked for them so much and so long, and getting so much of their good money that you just naturally lean toward them, and can't help it?

A. No sir, I don't lean toward nobody.

And further deponent saith not.

M. S. CLAYTON,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 7, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 280.

1661 Next witness, W. T. HIGDON, for defendant, in rebuttal, having been duly sworn, testified as follows:
Examined by General FOWLER:

Q. Mr. Higdon, where do you live?
A. I live at Higdon's Store, Fannin County, Georgia, in the ninth land district.
Q. Do you run what is known as Higdon's Store?
A. I used to, just the post office.
Q. Do you live in Higdon, now?
A. Yes sir.
Q. How long have you lived there?
A. I came there in 1889.
Q. And have lived there ever since?
A. Yes sir.
Q. What is your age?
A. I am forty-seven the 13th day of May.
Q. Are you engaged in mercantile business?
A. No sir, I am farming.
Q. For how many years have you been farming?
A. Well, I have been farming a little off and on ever since I have been in that place.
Q. How large a farm have you?
A. I have about 160 acres of land.
Q. What kind of crops have you grown this year?
A. I have grown some corn and melons and potatoes and pease and pumpkin-, and a little rye.
Q. What time of the year did you sow your pease?
A. I planted them with corn.
Q. Did you plant them early?
A. It was late in May when I planted the corn.
Q. Have you observed the other crops in that neighborhood during this year?
A. I have been pretty close at home all the while. I had the post office, and when I was not working, my wife ran me off.
1662 I had a little stuff in the field.
Q. How far is your field from Higdon's store.
A. Right close.
Q. State whether or not your crops have been damaged this year to any extent by smoke fumes?
A. There was some smoke in that locality in June, and if my memory serves me, between the 8th and 9th of June, 1914.
Q. To what extent did that smoke damage you?
A. Slightly; it was a slight damage.
Q. State whether or not at any other time during this season your crops have been injured by smoke?
A. I have not noticed it.
Q. Have you given attention to it?
A. I have been right in it.
Q. Did you work in your crops yourself?
A. Yes sir.

Q. Have you noticed any damage on any other occasion to any other crops in that neighborhood during the present season?

A. Well, I have seen something on the corn, and the tops of the corn. Now, there were some fellows came up there, and a man living on my place got a crop, and he had a claim against the company; I live on the bend of the road, and there was an automobile came along, and the driver says, "hello, what about Mr. Smith over there", and I didn't know Mr. Smith had any claim——

General DRAKE: We object to all that as hearsay.

A. (cont'd). —and I went with them over in the field on my place, and they were looking at some corn, at the tops along there, and at a little orchard on the place, and they saw some little stains on some bushes in the hollows as they went along. That is about — I could tell.

Q. Now, when was that?

1663 A. That was in June, I believe. I will not be positive about that date.

Q. You think it was in June?

A. I would not be positive as to the date they came there.

Q. Was it after the time you saw smoke in there?

A. Yes sir, they came after that, and the corn had matured and the shuck was on the corn. If you plant corn in May, it don't mature until the latter part of the season, in August and September.

Q. It was sometime in August or September that you saw it?

A. Yes sir, it was after it began to mature. There were little dry spots on top.

Q. Have you noticed the forests around in your neighborhood there?

A. Yes sir, I believe I have; I have lived there for 26 years.

Q. Have you noticed any damage to the forest during the present season?

A. I cannot say that I have. There was some slight damage there to the forests, but we have had an unusually dry year there, the worst we have had in 26 years, to my personal knowledge.

Q. Did you observe whether or not that drouth had any effect of the forest?

A. Why, it was in the way of causing springs to go dry and where you looked up on the highlands which were sloping you could see the dead trees along there. I had reason to believe from that that they died from drouth?

Q. What time of year was that drouth?

A. It was along in May and June, and pretty well up to the first of July when it commenced raining, very little rain, but we considered it the dryest year that we have had in 26 years.

Q. You have not made any trips through that country,

1664 have you, since, of the Ducktown country, have you?

A. No sir.

Cross-examination.

By General DRAKE:

Q. Mr. Higdon, You say that corn, where the ears were burnt and the tassels, I believe you described the tassels, did you not?

A. What we noticed, were on top of the shuck. There was slight damage on the shuck, on the top side of the shuck.

Q. That injury could not have been caused by smoke the eighth of June, could it?

A. No, is was not matured.

Q. Because corn on the 8th of June was little stuff?

A. Yes sir.

Q. It did not have any ear on it?

A. No sir.

Q. But on that mountain side above you there, have you been out in there?

A. Which mountain side do speak of?

Q. Have you been on any of them?

A. I have been on the closest to me; I have not been out in the woods.

Q. You have not been out in the woods?

A. No sir, I have not been out in the woods.

—. ——.

A. No sir.

Q. You don't know how the conditions in the forest are out there?

A. Nothing only what I could see from home.

Q. Did Mr. J. P. Vastal, did you know him?

A. Yes sir.

Q. And Mr. John Vestal, John H. Vestal, I believe it is?

A. Yes sir.

Q. And a Government expert Dr. Hedgecock, and Mr. Johnson, and Mr. Clark, two Government foresters, if they should
1665 have gone all through that section, through that country there and should swear that the worst smoke injury there was in August, you would believe them, would you not, in the forests?

A. The worst smoke injury in August? If I had seen smoke—I did not notice any smoke in August, I did not notice anything.

Q. You would not believe there was such damage unless you saw it?

A. There was slight damage there. Those arbitrators though-there was damage on that corn shuck piece that I speak of.

Q. I am speaking of this: If these men had been in this section all around through in there, and testified about it, you would believe it was smoke injury, would you not?

A. Yes, what I saw on mine, I believed.

Q. There was a good deal of discoloration and trees dying all through there? You attributed that to the drouth?

A. Most certainly.

And further deponent saith not.

W. T. HIGDON,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 7, 1914.

[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 240.

Next witness, W. T. POSTELL, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by General FOWLER:

General DRAKE: We except to the introduction of this
1666 witness, because his name was not included with the list filed with us when the notice was given to take these depositions.

Q. Mr. Postell, where do you live?
A. I live in Fannin County, in the Caldwell District.
Q. Do you live near Flat Mountain?
A. Yes sir.
Q. Whereabouts with reference to Flat Mountain?
A. I live right at the foot and on this side of it, within about two miles of the top.
Q. How far is that from Bush Head?
A. I guess it is about four miles, maybe more, maybe not quite so much.
Q. Have you been on Flat Mountain this summer?
A. Yes sir.
Q. How often?
A. I guess I have been up there maybe half a dozen times. My sheep run on the mountain, and I have got to go up there to salt my sheep.
Q. Have you noticed on Flat Mountain, or about Flat Mountain any evidences of smoke injury this summer?
A. Well, I can't tell sir. I didn't see any damage, that is, that I thought was smoke.
Q. Do you raise crops?
A. Yes sir.
Q. Are you a farmer?
A. Yes sir.
Q. What kind of crops did you raise?
A. Corn, cabbage, and garden stuff and pease.
Q. Has there been any damage to your crops this year?
A. If there has I cannot tell you.
Q. Have you seen any damage during the present year to any crops in your neighborhood from smoke?
1667 A. No sir, not around me.

General DRAKE: We except to all this evidence as not being in rebuttal of anything the State introduced.

Cross-examination.

By General DRAKE:

Q. Did you see some trees up there that had been damaged by smoke?
A. There were dead trees, more or less timber every year around the mountains.
Q. And there is plenty of smoke there every year, too.
A. There is plenty of smoke there every year, I reckon.
Q. Sulphur smoke?
A. Sulphur smoke, I noticed it two days pretty strong.
Q. This year?
A. Yes sir.
Q. You mean by noticing it, that you could see it?
A. In the coves.
Q. And could smell it?
A. Yes sir; Oh, yes, you could smell it.
Q. And you saw it two days?
A. There was smoke in there pretty often, but I couldn't tell; smoke of any kind will settle in the coves.
Q. Yes I know.
A. There were two days, though, that you could smell the smoke.
Q. And about how far is that from the Copperhill and Ducktown copper companies.
A. Well, it is about 17 miles; it is about 14 to McKay's.
Q. And in what county was this; what county do you live in?
A. I live in Fannin, on the Gilmer line, which runs along the top of the mountain.
1668 Q. You are down close to the Gilmer County line?
A. Yes sir, within two miles of it.

Redirect examination.

By General FOWLER:

Q. Do you remember on what days you smelt the smoke?
A. My recollection is it was along about the tenth of June.
Q. Do you remember whether or not it was the 8th or 9th of June?

General DRAKE: We except to the question as putting the answer in the witness's mouth, and as being rather leading.

A. I do not. I know it was not far from the tenth.

And further deponent saith not.

W. T. POSTELL,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this 7th day of November, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 250.

(The further taking of depositions was here adjourned until Monday, November 9th, 1914, at 9 o'clock a. m. at which time same were resumed pursuant to adjournment.)

Next witness, J. E. THOMPSON, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by General FOWLER:

Q. Where do you reside?
A. Knoxville.
1669 Q. What is your business?
A. Photographer.
Q. How long have you been following the profession of photography?
A. Twelve years.
Q. How long have you been located in Knoxville; during that entire time?
A. Yes sir.
Q. State whether or not you understand color photography?
A. Yes sir.
Q. Have you or not recently made any pictures for the Ducktown Sulphur, Copper and Iron Company?
A. Yes sir.
Q. When was that?
A. In the early part of September, from the 3rd to the 17th, I believe.
Q. September of this year?
A. Yes sir.
Q. Who employed you to take those pictures?
A. Mr. Reese, of the Ducktown Copper Company.
Q. How many days were you on the trip engaged in taking the pictures?
A. To state it exactly, I do not remember. I left my notes at home, too.
Q. State approximately.
A. Two weeks probably a day over; something like that.
Q. In a general way state through what territory you traveled at that time.
A. The first part, we went through the southern part of Fannin County towards Ellijay and Gilmer County. In that county—Is it Ellijay? Is it Gilmer County that Ellijay is in, or Fannin?
Q. Gilmer.
1670 A. Southern part of Gilmer County then, first, and then out through the west part of Gilmer County; then the northern part; then up to the northern part of Fannin County, the Southen part of Fannin County and the territory near Blue Ridge.
Q. Did you go around near Epworth?
A. Yes.
Q. Back in that section?
A. Yes.

Q. Who were with you?
A. Mr. Reese was with me, and Mr. Holt.
Q. Which Holt?
A. Mr. B. H. Holt, and Mr. Quintrell was along on some trips.
Q. That is J. H. Quintrell.
A. Yes sir.
Q. Who selected the places the pictures of which were taken?
A. Mr. Reese selected the biggest majority of them. We took a good many of them from selection by the crowd. Mr. Holt picked out many of them, and Mr. Reese, and I suggested some myself.
Q. What was the object of taking the pictures?
A. As I understood it, it was to rebut some evidence that had been taken in this case previously.

Mr. HILL: I except to the answer as being hearsay, the witness saying that he understood it was for certain purposes.

Q. State whether or not it was your purpose to show the true condition of the forests.

Mr. HILL: We except to the question as being leading and suggestive of the answer desired.

A. Yes sir.
Q. Do or not these pictures show the true conditions of the forests at that time?
1671 A. Yes sir.
Q. State whether or not you picked out the most favorable places for taking pictures, or did you take the forests as they came?
A. I will have to answer that we had a limited number of plates, and we had to distribute them over those two counties, not for the purpose of skimping any place, but we had to make the plates cover the counties, and for that reason we picked places that we thought would generally give the conditions.
Q. Did you or not purposely avoid places that appeared to be more damaged than others?
A. Not to my knowledge.
Q. Did you see any places in the forests which showed more damage than those, pictures of which were taken?
A. No sir.
Q. Who developed these photographs?
A. I did.
Q. State whether or not you have taken a picture of the Geological Survey made by the United States Government of that section of the country.
A. Yes sir.
Q. What particular territory is shown by that portion of the map which you photographed?
A. The territory where we photographed.
Q. That is, you mean the territory over which you traveled, and where the pictures were taken?
A. Yes sir.

Q. Have you the photograph of the map prepared by the Government, present?

A. Yes sir, this is the photograph.

Q. State whether or not you have shown upon that photograph-map the territory over which you traveled?

1672 A. Yes sir.

Q. Have you or nor designated the various points where the several photographs were taken?

A. Yes sir, I have.

Q. How were they designated on that map?

A. By a dot and a arrow showing the direction the photograph was taken, and by numbers.

Q. Are the photographs which you took and which have been developed by you, numbered?

A. Yes sir.

Q. State whether or not the numbers on the photographs correspond with the numbers given on the map?

A. They do.

Q. That is, as I understand, photograph No. 1 is a photograph of the point where figure 1 is on the map?

A. Yes sir.

Q. And what is it the arrow indicates?

A. The arrow indicates the direction that the camera was pointed when the view was taken.

Q. In what color is your journey and the points photographed, represented on this map?

A. In gold, and the routes are in gold lines, the numbers and arrow points in points of yellow.

Q. Will you please file said map as Exhibit A to your deposition?

A. I so file it.

Exhibit A.

Mr. HILL: We except to Exhibit A, as being original evidence, and not in rebuttal of any evidence offered by the State, and as being cumulative of the defendants' original evidence.

Q. Did you yourself make those designations on the plat?

1673 A. Yes sir.

Q. State whether or not you kept notes showing the route which you took, and showing various points where the pictures were taken?

A. Yes sir, I did.

Q. Were those notes taken at the time you were making the photographs?

A. Yes sir.

Q. State fully just what those notes do show?

A. Each note gives a brief description of just what the view is, and where taken, and the object taken.

Q. How many photographs were there?

A. 42.

Q. More than that, were there not?

A. Yes sir; 142.

Q. Have you those photographs present?

A. They are in that box, I think (Indicating).

Q. Now, I wish you would begin at number one, and state the information you possess with reference to each one of those photographs, and continuing on to the last number. You may refer to your notes to refresh you- recollection.

The WITNESS (to Mr. Reese): Have you the duplicate of my notes?

Mr. REESE: Yes.

Q. Is it all the same thing?

A. Yes sir, these are a duplicate of my notes. We commenced September 3rd, 1914, they are as follows:

No. 1. View taken about three and one half miles south of Blue Ridge, Georgia, looking forward from the road leading to Ellijay near the crossing on L. & N. Railroad.

No. 2. View taken about five miles south of Blue Ridge on road leading to Ellijay, looking eastward. Stubblefield in foreground.

No. 3. View taken at Cherrylog, Georgia, looking east-
1674 ward showing corn field with L. & N. station in the distance.

No. 4. View looking eastward from the road to Ellijay showing Turniptown Valley and Turniptown Mountains in the distance. The Northcutt apple orchard is seen on the mountain. Point of sight, about 3¼ miles north of Ellijay.

September 4th, 1914. No. 5. View taken at Iron Bridge over Cartecay River in East Ellijay, looking northward, showing dead nigger pines on bluff.

No. 6. View taken from Iron Bridge over Cartecay River at East Ellijay looking eastward, showing corn field and river in foreground.

No. 7. View taken about three and one half or four miles east of Ellijay on the road leading to Cartecay and on the farm of Henson. Photo shows corn foeld and garden and residence of Henson, looking west.

No. 8. View taken three and one half or four miles east of Ellijay on road leading to Cartecay looking northwest, showing Arnold and Northcutt mountains.

No. 9. View taken at Dyke, Georgia, looking eastward, showing apple orchard in foreground, green forest in the distance.

No. 10. View taken on I. B. Evans' farm looking southeast and toward his house, from an old barn.

No. 11. View taken near Dawson County line on Dyke and Snider road, showing fields and green forestry, also the head waters of Turkey Creek and J. C. Walker farm. Near Snider, Georgia.

No. 12. View taken on the road from Dyke to Yukon near crossing of Clear Creek. Photo shows the run down and unkept condition of a Mr. Allen Finley's farm.

No. 13. View taken on the road from Dyke to Yukon showing an apple orchard of L. M. Teague. Clayton Mountains in the distance.

1675 No. 14. View taken on the road from Dyke to Yukon showing the farm of a Mr. Kye Sanford. Looking southward.

September 5, 1914. No. 15. View taken on the road Ellijay to Morganton, looking southwest, showing the town of Ellijay, Georgia. Corn field of Barcley and others in foreground, forest in distance.

No. 16. View taken on the Cox farm looking northeast showing Turniptown Creek Valley, L. & N. Railway and Blue Ridge Mountains in the distance.

No. 17. View taken on the Cox farm looking southeast, showing Turniptown Creek Valley and looking across Shippen's farm. Blue Ridge Mountains in the distance. Camera same position as number sixteen.

No. 18. View on Settlement road between Morganton and Turniptown roads from Will Key's house showing Shippen brothers' farm. Cox and Whitaker farms in the distance.

No. 19. View on the Printup farm, showing apple trees. Two small children in the picture.

No. 20. View on the Printup farm looking southwest, showing apple trees. Ridge in the distance. Three small children show in this picture.

No. 21. View on the Printup farm looking southeast showing apple orchard with Little Round Mountain in the distance. Two small children show in this picture.

No. 22. View from the rear porch of S. P. Holt on Printup farm looking northeast. Fruit trees and lady in the foreground Lill Mountain in the distance.

No. 23. View on Settlement road Morganton to Turniptown at Shippen's land, looking southward, showing Northcutt farm and Mountains in the distance.

No. 24. View on the road Ellijay to Turniptown near Gatlin Post Office looking east, showing Stover and Ball Mountains in
1676 the distance. Road and *and* corn field in foreground.

No. 25. View on the road Ellijay to Turniptown looking southwest. Northcutt orchard in background. Arnold forest in foreground.

No. 26. View on Arnold orchard near line of Northcutt, looking east, Stover Mountain in the distance.

No. 27. View on Arnold orchard near line of Northcutt, looking north, showing a Aaron Mountain. Tenement houses of Arnold farm in foreground.

No. 28. View on east end of Northcutt orchard, near barn, looking northwest, showing orchard and Blue Ridge mountains in the distance.

No. 29. View on east end on Northcutt orchard, near barn, showing east end on Northcutt orchard above the barn.

No. 30. View on Ellijay to Turniptown road, looking southward across Ray Ratliff farm. Barn in distance.

No. 31. View on Ellijay and Turniptown road showing farm of E. R. Weeks. M. H. Stanley farm and forest in distance.

September 7, 1914. No. 32. View on Ellijay and Round Top

road about three quarters of a mile west of Ellijay on E. W. Watkins' place looking northeast, showing forest, etc., Watkins' farm.

No. 33. View on Ellijay-Round Top road about one mile west of Ellijay on Watkins' farm looking southwest showing forest. Apple tree in foreground.

No. 34. On Round Top road near L. & N. Railroad crossing looking southwest, showing farm of Henry Webb, pease and beans in the foreground.

No. 35. On Round Top road near L. & N. Railway crossing looking north, showing man standing in the pea and bean garden and forest in background.

No. 36. View on Ellijay and Round Top road looking
1677 northward across Pinray's orchard and farm.

No. 37. View on Ellijay-Round-Top road about two miles south of Ellijay, looking north across Pinray and De Board farms. Corn and L. & N. Railway in foreground. Blue Ridge mountains in the distance.

No. 38. On Ellijay-Round Top road at Charles Silver's place. Camera in cotton field looking north east. Cotton and young apple trees in foreground. Ridges in distance.

No. 39. On Ellijay-Round Top road at Charles Silver's place, but looking south west. Forest in the background. Cotton and young apple trees in the foreground.

No. 40. View on Ellijay-Round Top road at Mann Davis' place looking northward. Poor condition of farm in foreground, forest in background.

No. 41. View on Ellijay-Round Top road at Ben Tillery farm, looking north east, showing corn field. Forest in distance.

No. 42. View on Ellijay-Round Top road at Moore Farm, looking south, showing cotton fields, Blue Ridge mountains in distance.

No. 43. View on Ellijay-Round Top road at Moore farm, looking northeast, showing cotton field and peach trees.

No. 44. View on Ellijay-Round Top road, showing Gaul Keener's forest. Blue Ridge Mountains in distance. This place in about one mile northeast of Round Top post office.

No. 45. View on Flat Creek road at Gentry's place, near Ellis Mill looking northward, showing barn and mill.

No. 46. View on Flat Creek road looking east, showing forest of Jack Silvers. Road and auto shown in foreground.

No. 47. View on Flat Creek road looking south across Woodward's land. Corn field and forest shown in this picture.

1678 No. 48. View on Flat Creek road looking southeast across the Woodward land. Ben Woodward's house in foreground

No. 49. View on Flat Creek-Ellijay road looking northeast across Fairbank's farm. House and barn in foreground. Blue Ridge Mountains in the distance.

No. 50. View on Round Top-Ellijay road looking eastward toward Dr. E. W. Watkins' Jr., farm. Blue Ridge mountains in the distance.

No. 51. View on Round Top-Ellijay road, looking east toward W. H. Warlick farm. L. & N. Railway and corn field in distance.

No. 52. View on Round Top-Ellijay road looking across the old Park's place about two and three quarters miles below Ellijay. L. & N. Railway in distance.

September 8th, 1914. No. 53. View on Jasper-Ellijay road looking westward across the Sutton place showing apple orchard and cotton fields

No. 54. View on Jasper-Ellijay road looking north across the Teams farm, showing corn fields. Blue Ridge mountains in the distance. House to left of picture.

No. 55. View of Jasper road about 7¼ miles from Ellijay looking southward. Road and auto in foreground. Forest in distance.

No. 56. View on Jasper road looking across Harley Martin's place. Cotton in foreground. Forest in distance.

No. 57. View on Cartersville-Blairsville road at A. A. Sutton's place, looking southwest showing farm and forest.

No. 58. View on Cartersville-Blairsville road looking east at A. A. Sutton's place, showing farm and forest.

No. 59. View on Cartersville-Blairsville road looking southwest across Haynes and Sutton farm.

No. 60. View on Cartersville-Blairsville road looking eastward across Simmons' farm, showing farm and forest.

1679 No. 61. View on Cartersville-Blairsville road northeast, across Simmons' farm showing farm and forest.

No. 62. View on Cartersville-Blairsville road. 1½ miles south of Dyke post office, looking westward.

No. 63. View on Cartersville-Blairsville road at Al Allen's farm, looking south showing Allen and Sutton farms and forest.

No. 64. View on Cartersville-Blairsville road looking eastward at Evans Mill on Turkey Creek. This view is one half mile north of Dyke, and shows white pines in middle foreground.

No. 65. View at Mountain View Orchard, J. W. Clayton, Proprietor, looking northeast, showing apple trees and sugar cane. Stover Mountain in distance.

No. 66. View at Mountain View Orchard, A "Stump-the-World" Apple tree. Three men shown in this picture.

No. 67. View at Mountain View Orchard, showing rows of Yates apple trees, with Stover Mountain in distance.

No. 68. View at Mountain View Orchard, showing an apple tree that has been damaged by the borers and San Jose Scale.

No. 69. View at Mountain View Orchard, showing a Ben Davis apple tree.

No. 70. View at Mountain View Orchard, showing a general view of orchard, looking east from the hen house. Stover Mountain in distance.

No. 71. View at Mountain View Orchard, showing a general view looking westward from a rise above the barn.

No. 72. View on road from Pike to Ellijay near Pike post office, showing Holt homestead, farm and forest, south.

No. 73. View on road Pike to Ellijay, near Pike post office, looking east showing Jasper Holt's farm and the forest in background.

September 9, 1914. No. 74. View taken from corner of
1680 new building being erected near the depot or Ellijay station, looking westward, showing old Ellijay in the distance. Corn field in the foreground. Blue Ridge mountains also shown.

No. 75. View taken from corner of new building being erected near the depot, or Ellijay station, looking south, showing station and Kelly corn field in foreground. Shippen Brothers' lumber yard and residence in the distance.

No. 76. View on L. & N. trestle over Cartecay River looking north, showing corn field *or* Jarrett, town of Ellijay, and Blue Ridge mountains in the distance.

September 10, 1914. No. 77. View on the Tayles Creek Ellijay road at a point one mile out of Ellijay, looking eastward, showing forest and Blue Ridge Mountains.

No. 78. View on Tayles Creek-Ellijay road looking west. Pease showing in foreground.

No. 79. Views on Tayles Creek-Ellijay road at C. B. Davis' place, one and one half miles from Ellijay, showing cabbage patch and forest.

No. 80. View on Tayles Creek-Ellijay road, at C. B. Davis' place, looking west from house. Corn in foreground, apple tree at left. Forest in the distance.

No. 81. View on Tayles Creek-Ellijay road, at Mrs. Buckner's place, about one and three fourths miles from Ellijay looking west, showing garden and forest. Mr. Reese and lady in this picture.

No. 82. View on Tayles Creek-Ellijay road, looking southwest, showing flowers and corn in foreground. Forest in the distance.

No. 83. View on Tayles Creek-Ellijay road, looking north, showing forest. Do not know whose farm is shown.

No. 84. View on Tayles Creek-Ellijay road, looking south across Lush and Cobb farms. Forest in distance.

1681 No. 85. View on Tayles Creek-Dalton road, looking southward, mountain creek and bushes in foreground. Forest in background.

No. 86. View on Tayles Creek-Dalton road, looking northeast, showing corn field, house and forest. Blue Ridge Mountains in distance. Atmosphere hazy.

No. 87. View on Settlement road about seven miles west of Ellijay, on Mountaintown Creek road, looking southeast across Gudger farm, corn and forest in foreground. Forest in distance.

No. 88. View on settlement road seven miles west of Ellijay on Mountaintown Creek road, looking southeast. Corn and forest in foreground. House in distance.

No. 89. View on Settlement road between Mountaintown and Ellijay, looking east across Stark's place. Cabin and corn field in foreground.

September 14, 1914. No. 90. View at Burnt Store near Tennessee and Georgia lines, looking northeast, showing Tennessee Copper Company's plant at right, D. S. C. & I. Company at left, Pack Mountain in the distance.

No. 91. View on Pelfrey place, three and one half miles from Copper Hill, looking east, showing apple trees and orchard.

No. 92. View on Pelfrey place, looking eastward, showing orchard. Pack Mountain and smoke from Tennessee Copper Company's high stack in distance.

No. 93. View at Payne's place, looking west, field, barn, and fence in foreground. Grannymarr Mountain in distance.

No. 94. View on D. M. Beaver's place looking south, showing auto, etc. Forest and Blue Ridge mountains in distance. About four miles west of Copperhill.

No. 95. View on Ducktown-Hell's Hollow road, about nine miles from Ducktown, looking northwest across Brook's place showing trees and fence in foreground.

1682 *Grannymarr Mountain in distance.*

No. 96. View on east end of Iron Bridge over Fightingtown Creek, near Madola post office, looking northward, showing bridge in foreground. Forest in background.

No. 97. View on east end on the Iron Bridge over Fightingtown Creek looking east, showing cane fields. Forest in distance.

No. 98. View on Ducktown-Oasis road, looking southeast across Billy Couch place, farm and forest.

No. 99. View on Ducktown-Oasis road, leading to Barnes Gap, looking south, at Barnes Mountain. Field in foreground.

No. 100. View on Ducktown-Oasis road leading toward Barnes Gap looking southward at Barnes Gap.

September 15, 1914. No. 101. View on Pack place looking west, showing garden, apple trees, and barn in foreground. Forest and Muletop Mountain in distance. A. H. Pack place located about one mile northwest of Oasis post office.

No. 102. View on road leading from Oasis to Barnes Gap, looking southwest, showing farm and corn in foreground. Forest in distance. This view shows some girdled dead timber.

No. 103. View on road leading from Oasis to Barnes' Gap looking westward, road and Barnes' house in foreground. Gap in distance.

No. 104. View on road, Ducktown, leading to Higdon's Store, about one fourth mile north, of Higdon's Store, looking westward, showing fence and corn in foreground. Forest in distance.

No. 105. View on road, Ducktown leading to Higdon's Store, about one fourth mile north of Higdon's Store, looking southward, showing fence and corn in foreground. Forest in distance.

No. 106. View on Sam Higdon's place near Higdon's Store post office, looking southward showing cleared brush in fore-

1683 ground, corn field in middle distance, forest in distance.

No. 107. View on Brushy Head Gap road, about two miles southwest of Higdon's Store post office, looking southwest, showing fence and orchard in foreground. Forest in background.

No. 108. View on Brushy Head Gap road about three miles south of Higdon's Store post office at Watkins' place, looking southward. Filed and corn in foreground. Near the Fannin-Gilmer County line.

No. 109. View on Bushy Head Gap road, about one mile north of county line. Corn and top of house in foreground. Forest in the distance.

No. 110. View on Bushy Head Gap road about one half mile south of county line, looking north west across George Chancy's place. Fence and road in foreground. Forest in background.

No. 111. View on Bushy Head Gap road about one mile south of county line looking northeast. Road and fence in foreground. Bushy Head Mountain in Background.

No. 112.—View on Ducktown-Ellijay road about three miles north of Burnett post office, or ten miles north of Ellijay, looking northwest. Fence in the foreground. Forest and Blue Ridge Mountains in the distance.

No. 113. View on Ducktown-Ellijay road about four miles northward of Ellijay looking across J. A. Jones' place. Fence shown in foreground. Corn and forest in distance.

No. 114. View on Ducktown-Ellijay road about three miles northward of Ellijay, looking northward across Alfred Steward or the old Kell place, showing pease and corn in the foreground. House, orchard and forest in distance.

No. 115. View on Ducktown-Ellijay road about two miles northward of Ellijay, looking east across Doctor Tankersly place. Meadow in foreground forest and Blue Ridge Mountains in distance. Northcutt at right.

No. 116. View on Ducktown-Ellijay road about one fourth
1684 mile northeast of Ellijay looking across Barley's place, corn field in foreground, forest in distance.

No. 117. View from the upper porch of Mr. V. Trammell's home. Three fourth miles south of Ellijay, looking eastward across Watkin's farm, showing a general view of Ellijay, east, Ellijay, Shippen Brothers Lumber Company, and Shippens' residence at right, station in center, part of old Ellijay at left. Ridges and mountains covered with forest in distance.

No. 118. View on L. & N. Railway 240 yards south of river bridge over Cartecay River looking east showing Mr. Will Shippen's residence in center, Frank Shippen's residence at right. Field in foreground.

September 16th, 1914. No. 119. View on Ellijay, Morganton road looking northwest across J. W. Watkin's place showing apple trees and corn and unkept condition of garden in foreground, forest in distance.

No. 120. View of Ellijay-Morganton road looking north, showing road in foreground, farm and forest in distance. Underwood house in center. (We were refused permission to make photos on the Watkins' place, and these and No. 119 and No. 120 were made under protest of Mr. Watkins even from the public road.)

No. 121. View on road Blue Ridge-Chestnut Gap three miles out of Blue Ridge, looking north, showing orchard and cornfield. Forest in distance.

No. 122. View on Mr. W. E. Rodgers' farm four miles east of Blue Ridge and adjoining the Miller and Chastain's farms, showing

a load of watermelons coming from the patch. Corn, melon patch, and forest in background.

No. 123. View on Mr. W. E. Rodgers' farm four miles east of Blue Ridge and adjoining Miller and Chastain farms, showing a load of watermelons coming from the patch (nearer view than No. 122.)

1685 No. 124. View on Mr. W. E. Rodgers' farm looking southeast from Vineyard and near the barn, showing early (ripe) corn in foreground, late corn and forest in distance.

No. 125. View on Morganton to Blue Ridge road about five miles east of Blue Ridge. looking northward showing farms of L. G. Allen in foreground, Dr. Chastain's at left, N. E. Rodgers' in center.

No. 126. View on Morganton to Blue Ridge road looking eastward, showing corn and meadow of Henry Smith and others in foreground, forest in distance.

No. 127. View on W. E. Rodgers' place showing north end of tomato patch.

No. 128. View on W. E. Rodgers' place, showing watermelon patch with men. Forest and mountains in distance.

No. 129. View on Sunset Mountain about one mile westward of Blue Ridge, Georgia, looking northward, showing forest and valleys. Smoke from Tennessee Copper Company's plant in center, extending to left of photo. Pack Mountain at right.

No. 130. View on Sunset Mountain one mile westward of Blue Ridge, Georgia, looking northward, showing ridges covered with forest. Smoke extending in the valleys southwest of Tennessee Copper Company's plant.

No. 131. View on Sunset Mountain about one mile westward of Blue Ridge, Georgia, looking northward, showing forest and valleys. Smoke from Tennessee Copper Company's plant in center, extending to left of photo. Pack Mountain in distance.

No. 132. View on road from Blue Ridge to Copperhill, about ten miles south of Copperhill, looking northward, showing stubble in foreground. Corn and house in distance.

No. 133. View on road Blue Ridge to Copperhill, about nine miles southward of Copperhill, looking westward across John Gilliam's place. Fence in foreground, apple trees at right.

1686 No. 134. View on J. W. Gilliam's place about eight and one-half miles southward of Copperhill looking westward, showing pea field, forest in distance.

No. 135. View on J. W. Gilliam's place, about eight and one-half miles southward of Copperhill, looking eastward showing man in pea field, also corn, etc.

No. 136. View showing quality of corn raised by J. A. Castain, one half mile southward of Epworth.

No. 137. View near Epworth school, looking southward, showing corn, garden, and house.

No. 138. View near Epworth school, looking northeast. Epworth spring in foreground, also corn, and forest with Pack Mountain in distance.

No. 139. View in Epworth cemetery, looking westward, showing J. P. Vestal residence, orchard, corn and barnes.

No. 140. View on Pierceville-Blue Ridge road, looking across William Stepp's place, showing garden and forest. Epworth school in distance.

No. 141. View at Mobile mine looking south showing forest. Flat Top Mountain in distance.

No. 142. View at Hopewell church looking westward.

Q. Will you file said photographs as exhibits one to 142 the number of the exhibits corresponding with the number of the photographs.

A. I so file them. Exhibits one to 142.

Mr. HILL: We except to all of the exhibits for the reason that they are original evidence and not in rebuttal of anything offered by the State, and cumulative of the defendants' original evidence; and further, to all the exhibits offered which the witness has not testified as to distance from the plants of the defendants,
1687 that were taken, or the location at which they were taken.

Q. Mr. Thompson, state whether or not the scale of the map filed as Exhibit A is the same as the scale of the Government map or is it enlarged?

A. It is enlarged.

Q. How many times is it enlarged.

A. Probably twice.

Q. That is, you mean the distances on this map are twice what the distances are on the Government map.

A. Approximately so.

Mr. HILL: We except to the answer because it is indefinite.

Q. You say, "approximately"; what do you mean by that?

A. In making a photograph, paper of that size will shrink or expand, and I don't know just what that is, how much it will be; may be a quarter of an inch to the foot, or may be more or less. I can't say accurately; I can't say; it is a physical impossibility.

Q. Then, whether or not it is made actually twice the scale, depends on the shrinkage on the paper; is that it?

A. That is the idea. I will state that if there is any distortion of any kind in the map, what ever the scale is, it is true throughout.

Q. That is, the relative distances are accurate?

A. They are accurate, yes sir.

Q. Do you know what the scale of the Government map was?

A. I don't remember.

Q. Do you know whether or not, Mr. Thompson, you photographed some places which had been photographed for the State of Georgia.

A. Yes sir.

Q. Did you have those photographs with you? or copies of them?

1688 A. No sir.

Q. Did you ever see those photographs?

A. No sir.
Q. Where did you get your information?
A. From the testimony of the photographer.
Q. Did you examine his testimony?
A. Yes sir.
Q. Can you say that the numbers of your photographs correspond with the photographs taken by Photographer Adams?
A. I could not, accurately.
Q. Can you by looking at your notes state which of your photographs correspond with those of Mr. Adams?
A. I can some, but I could not all.
Q. I wish you would examine your notes and see.
A. No. 6, View taken from the iron bridge at Cartecay River, at East Ellijay, looking eastward, showing corn fields and river in foreground.
Q. Do you know which exhibit filed with the evidence of Mr. Adams that is?
A. No sir.
Q. Or do your notes show?
A. I did not make notes that way.
Q. Go ahead.
A. No. 5, taken at the same place, looking northward. I will have to state in regard to this that I am doing this from memory, because I did not make notes of it, and it would have to be to the best of my knowledge. No. 90; View at Burnt store near Tennessee and Georgia line looking northeast showing Tennessee Copper Company's plant at the right, D. S. C. & I. Company at left, and Pack Mountain in the distance. No. 96; View on east end of iron bridge over Fightingtown Creek near Madola post office, looking northward, showing bridge in foreground, forest in background.
1689 No. 97. View taken at the same place, at the east end of the iron bridge over Fightingtown Creek looking east, showing cane field. Forest in distance.
No. 138. View near Epworth school, looking northeast. Epworth spring in foreground, also corn and forest with Pack Mountain in the distance.
No. 140. View on Pierceville-Blue Ridge Mountain, looking across William Stepp's place, showing garden and forest. Epworth school in the distance.
That is all I really remember, and that is only from memory.
Q. State whether or not you took a picture of each place that was mentioned as having been photographed by photographer Adams in his testimony.
A. I will have to answer that question that I left that to Mr. Reese to a great extent. I read Mr. Adams' evidence and tried to follow it, but I could not keep track of the camera, plates, and everything, and I left it to his judgment a great deal. These plates are the only ones I remember of.
Q. Your notes do not show that Mr. Adams had photographed those points or not?
A. No sir.

Q. State whether or not you read Mr. Adams' evidence with a good deal of care, that is, the part in which he described those places that he photographed?

A. I read it with a good deal of care, but the country was absolutely new to me, and I could not say that I understood from his testimony just exactly where the places were.

Q. Did you or not endeavor to take the same places as nearly as you could from his description?

A. Yes sir.

Q. You or course were present and saw the places photographed and the character of the trees, foliage, vegetation, etc. Now
1690 state whether or not the conditions there existing at that time are properly represented by your photographs?

A. They are.

Q. You developed the photographs yourself?

A. Yes sir.

Q. Have you or not examined these photographs?

A. Yes sir.

Q. Do those photographs record accurately the color of the forests?

A. Yes sir.

Q. If there is a dead tree in the forest is it shown in the photograph?

A. Yes sir.

Q. If there is a tree in the forest having dead leaves, is that shown in the photograph?

A. Yes sir.

Q. Is or not dead or withered vegetation shown?

A. Yes sir, it would be shown too.

Mr. HILL: I except to all of the evidence of this witness as being original testimony, and not in rebuttal of any thing offered by the Complainant.

Cross-examination.

By LAMAR HILL, Esq.:

Q. Mr. Thompson, when was this trip that you made down there?

A. Beginning September third.

Q Extending up to what time?

A. To the sevenenteenth excepting—we missed one day or some time in there, I don't know what it was—two days.

Q. Where were the first pictures taken on the first days from the third to the sixth.

A. The first picture was made between Copper Hill and Ellijay, as one, two, three, and four.

Q. I mean at what point between Copper Hill and Ellijay;
1691 where did you start that operation?

A. We started at Copper Hill.

Q. And worked south and came around northwest from Ellijay?

A. We will have to dig that out from the photographs, because I did not make a route of just how we proceeded, only by the num-

bers. We numbered them consecutively, and that would show from the map how we worked it.

Q. You testified that Mr. Reese generally selected the places where you would take these pictures, and that the other places were selected by conference among the members of your party?

A. Yes sir.

Q. You didn't know anything about North Georgia at all, did you?

A. No sir.

Q. You knew nothing about the locations?

A. No sir.

Q. You did not know what places had been testified to by any witnesses for the State as having been photographed?

A. Only by reading the evidence.

Q. I mean from description; you could not tell the geographical location of them?

A. No sir.

Q. And you left all that to Mr. Reese, to show you where that was?

A. Yes sir.

Q. You could not swear that a single picture that you took is taken at any place described by Mr. Adams, the State's photographer, from your own knowledge?

A. There are two or three of them that I could, yes sir; one at the iron bridge near Madola post office, where the description is so plain from his testimony that there is no doubt about it.

1692 Q. And what other one?

A. And the Burnt Store near Tennessee and Georgia State line, being photograph No. 90.

Q. And what other one?

A. I don't remember the others.

Q. Where there any others, Mr. Thompson, that you can think of?

A. Not that I can think of now.

Q. There are three, or two, which?

A. There were two places. One of them the camera did not include or take in enough of, and we swung around and made more of the view.

Q. There are two places where you can swear from your own knowledge are described by Mr. Adams, that you photographed?

A. Yes sir.

The rest you know nothing about whatever, except that Mr. Reese told you or Mr. Quintrell told you or Mr. Holt told you that they were the places described by Mr. Adams.

A. Well, I read the testimony, and I was affected by the reading of the testimony, too.

Q. Didn't you just swear a few minutes ago you could not tell from that testimony and that description the geographical location of those places?

A. Not positively.

Q. And you were governed largely by what these people who had lived there and traveled that country said?

A. Yes sir.

Q. It would range, at what range were most of these photographs taken, what average range?

A. I don't understand your question.

Q. How far was the camera from the subject?

A. Different lengths.

Q. The average distance.

1693 *Q.* I cannot answer that question. Anywhere from three feet to three miles; the picture includes everything.

Q. What would be the distance of the central point of figure in one of those photographs, from the camera?

A. From what figure? Perhaps you cannot refer to the exact figure.

Q. You cannot tell that?

A. Not generally, no sir.

Q. You are not familiar with North Georgia, the forests and timber and crops, except from this trip, were you.

A. No, sir.

Q. Have you ever been in there before?

A. No sir.

Q. You knew nothing about it?

A. No sir.

Q. Now, did you see anything that looked like dead timber in there at all on all your travels?

A. Nothing more that I would see around in other countries.

Q. Did you see any at all?

A. Dead timber? Yes sir, there is dead timber there.

Q. Will you show me any single photograph of yours that shows any dead timber there?

A. I could be running through them.

Q. Are there any that show any dead timber?

A. Yes sir.

Q. I would like to have you pick them out and show them to us; and there is another question I will ask you in that connection; Did you see any dead leaves through North Georgia?

A. On the trees?

Q. Yes sir.

A. There are pictures that show they are dead; there are several.

Q. What pictures are there that you took that show any dead leaves, or any dead timber?

1694 A. I would have to look through the photographs to find them.

Mr. HILL: We can go on with this examination and you can pick them out when we get thruogh.

The WITNESS: Al-right.

Q. Did you see any autum- or fall tints on the leaves when you went through there?

A. Nos. 13, 14, 15, and 17, and around there, we saw some.

Q. Do they show in your photographs?

A. Yes sir.

Q. How do you know whether it was the fall tint, or caused by fung-us disease, or by sulphur smoke, or what?

A. I don't know positively.

Q. You don't know anything about that at all? What color red, brown, yellow, or pink, or what color was those leaves?

A. The fall tints come in all the colors that you have mentioned.

Q. Do all colors show up in color photography?

A. Yes sir.

Q. All colors?

A. Yes sir.

Q. Do you not have three primary colors from which the others are arranged?

A. No sir.

Q. But every color, from neutral up through all the colors of the spectrum, show?

A. On these plates, all colors are shown as they are.

Q. How does brown show up, as differentiated from black?

A. It will have red in it.

Q. Suppose it is light brown?

A. It will have less red and less black.

Q. Don't all browns take on the plate according to the red that is in them?

1695 A. No sir.

Q. Isn't red the color on the plate about which the brown colors form?

A. Brown is not only red; it is red and black and white when mixed on a palette.

Q. Suppose it is very light brown; would that show up?

A. It would show red, and less black.

Q. There are certain colors in this scheme of color photography that arrange themselves to form other colors. Is that true?

A. I don't understand your question.

Q. You were speaking of the arrangement of red, white and black to form brown. There — certain colors in color photography which arrange themselves in different manner to form certain other colors?

A. Well, it is not clear to me yet. I will say no. One group of colors won't affect another group of colors in this process.

Q. What I am getting at is this; in this process isn't the film that is over this plate on which the reproduction of the subject was made, isn't that process based upon the arrangement of certain colors in that mixture that is put over there as the film, and which rearrange themselves according to the light and the colors of the spectrum, are there not certain primary colors in this mixture that are put on as a film over this plate?

A. Yes sir.

Q. And do not those primary colors rearrange themselves according to the color that comes through the lens?

A. The image on the plate allows the colors to come through and show.

Q. Are all colors which are shown on the plate exact reproductions from the standpoint of color value?

1696 A. Yes sir.

Q. Of it? Just as in nature?

A. Yes sir.

Q. Will you take that plate and swear that those colors of the trees in the background are the colors of the trees in nature?

A. Yes sir.

Q. That is, that green is the color of the trees?

—. ——.

Q. Did you take any photographs except color photographs?

A. No sir.

Q. Did you take any close up?

A. Yes sir.

Q. To show what?

A. I don't think I made any closer than the group of an acre or so of trees generally in the forest. Of apple trees, we took closer views.

Q. Now, leaving out those fruit trees that you took at short distances, there were no photographs made of single trees?

A. I don't remember any single trees.

Q. Now, Mr. Thompson, you don't mean to take that photograph there and say that you can distinguish discoloration on the leaves and blades of corn stalks and things of that sort? If there were any, you don't mean to say you could distinguish them?

A. I would say if there was any discoloration at the time this was made, it would show in this photograph.

Q. You mean to say that a blade of corn or an ear of corn in that field which is photographed there would show in that photograph the discoloration?

A. Just like it was in the photograph.

Q. Would the camera be close enough to show it?

A. That is a matter of size. It would be there.

Q. Is the reproducing of it to such an extent that you could recognize it in that photograph?

A. I can, yes sir.

1697 Q. You could recognize the discoloration of the fourth stalk from the left end of the fourth row in that photograph, could you?

A. I might not be able to do it with my eye but I could do it with a microscope.

Q. I mean in looking at the photograph as you do ordinarily?

A. You point out the fourth row there that you want, and I will see.

Q. Any corn stalk you pick out.

A. I can say yes, in general, because there are plenty of them there I can see.

Q. Will you look at that photograph and pick out any ear of corn in there that shows silk on it?

A. I am not a farmer.

Q. Will you pick out an ear of corn on there?

A. The shocks are tied up. No, I cannot pick out any corn in that picture.

Q. Will you look in the background and give me the names on the various sorts of trees that are show- there, or distinguish any tree from another.

A. I don't know one tree from another. I am not a forester and I cannot tell.

Q. Could you tell a pine from a popular, or an oak from a chestnut, back there?

A. I can tell a pine from a popular.

Q. In that photograph?

A. I don't know as I could in this photograph, no sir.

Q. That doesn't show the forms of the leaves of the trees does it?

A. In a general way; that is a general picture; it is not a detailed picture; this is a general view.

Q. Are any of your picture-, detail pictures except some of these fruit trees that are heavily laden?

1698 A. You asked me if I made pictures of single trees; I made groups of trees that would show them.

Q. Groups of one acre, I believe you said?

A. Possibly that would show them.

Q. Let us get some of those. Look at this photograph No. 124 and see if you see any brown spots on any of the forest in the background there.

A. No sir, there are none in this picture.

Q. Take this photograph No. 123. I will ask you if, on the right of that photograph there are not brown splotches and brown leaves shown in the trees?

A. Yes sir.

Q. Look at the trees at the left of the photograph and see whether there are any shown in there?

A. No sir.

Q. The trees on the left are a greater distance from the camera than the ones on the right are they not?

A. Yes sir.

Q. Going back to this map for a minute, Mr. Thompson, exhibit A to your testimony; how did you fix those locations on the map; are you familiar with the scale, the use of the scale, etc., on maps?

A. Yes sir.

Q. And you fixed them yourself?

A. With Mr. Reese's help.

Q. Did you have a compass with you to determine the direction in which you were taking the photographs?

A. Yes sir.

Q. And did that yourself?

A. Yes sir.

Q. Now, on that bridge down at Ellijay Georgia, where you took one or two photographs; that is down behind a big mountain is it not?

1699 A. I would not call it a big mountain, no sir.

Q. Isn't there a mountain that lies on Ellijay bridge, is

there not a mountain facing it, lying between there and the direction of Copperhill and Ducktown?

A. I would call it a hill, I would not call it a mountain.

Q. How high is it, Mr. Thompson?

A. I don't know.

Q. It is a good deal higher that the top of the timber any where in that section?

A. Yes sir.

Q. That other bridge at Madola, which end of the bridge was that where you took that photograph of the group of green maples, of the green maple thicket?

A. On the east end.

Q. The photograph was made from the east end of the Madola bridge, was it?

A. My notes specify, I think. Do you know what number it is?

Q. No sir, I do not.

A. On the east end on the iron bridge.

Q. On the east end; do you know, Mr. Thompson, that Mr. Adams, the photographer for the Complainant in this case, took his photograph from that point, from the west end of the bridge and looking in the opposite direction?

A. Looking in the opposite direction?

Q. Yes sir.

A. If he did, he would not show the trees.

Q. I will get you to look at photograph No. 96. State whether or not there is any discoloration shown on the trees in that photograph.

A. There is some discoloration at the left end.

Q. Isn't it all through there, Mr. Thompson?

A. No sir.

Q. What is that in the top of the tree in the center of the
1700 photograph; isn't that brown showing up there?

A. No sir, I would not say that it was.

Q. You don't see any brown in there?

A. There is brown on the left hand, in here, and here and here.

Q. There are several spots of brown in the left side of the photograph?

A. Yes sir. That effect you see there is the effect of the light on the tops of the trees.

Q. Take number 98: State whether or not there is any discoloration running all through the timber in the left part of the photograph at the tops of the trees, showing?

A. No sir, there is no discoloration there.

Q. I will get you to state whether there is any discoloration shown in that photograph through the foliage?

A. Yes sir.

Q. Do you know to what that is due?

A. No sir.

Q. Is that an error in the picture, or does it show the true condition?

A. It shows the true condition.

Q. Now, you said in answer to General Fowler's question that

you selected places for taking your photographs that showed the general condition of things in North Georgia that were average views, is that true? That is what you answered.

A. As nearly as possible, yes sir.

Q. How did you know how to select the places that showed and average view, if you had never been in North Georgia?

A. I looked for them.

Q. How could you tell whether it was average or not?

A. Well, I couldn't tell, only by looking, and if I was not satisfied with a view, to keep on making them until I was.

Q. Did you go any places except the ones where you took your photographs?

1701 A. Yes sir.

Q. Just in the immediate neighborhood of the places where you did take the photographs?

A. No sir, not in the immediate places; they were several miles apart.

Q. In some places you did not take any photographs?

A. Yes sir.

Q. Why?

A. We did not see anything that would be any representation, except of what we already had.

Q. I mean in starting out, before you took any, did you not pass by some places with out photographing them?

A. Yes.

Q. Why?

A. To be exact in my answer, we could not photograph every square inch of the country, and we had to select places we thought would give the conditions, and had to use our judgment in the beginning. Of course, as we proceeded, we could be more descriminating.

Q. You took no studies of any other forest trees?

A. No sir.

Q. You took no photographs at close range, of any dead timber?

A. I can't remember.

Q. Will you swear, Mr. Thompson, that there is no more dead timber in any one spot which could have been photographed by you than is shown up in any of your photographs, not only dead timber, but discoloration of the leaves or foliage?

A. I don't understand that myself.

Q. (Question last above read.)

A. I think not.

Q. No more dead timber than is shown on the photograph?

A. No sir.

1702 Redirect examination.

By General FOWLER:

Q. Mr. Thompson, how do you inspect these colored photographs? I mean how do you look at them properly? Do you hold them up

between you and the light, or — there some kind of an instrument through which you inspect them?

A. They are viewed best through a diascope.

Q. What kind of an instrument is a diascope?

A. A frame, with a mirror that reflects the picture.

Q. Does the light pass through the autochrome plate through which the picture is recorded upon the mirror?

A. Yes sir.

Q. And it is reflected upon the mirror?

A. Yes sir.

Q. And does that give you a correct view of the landscape of which the picture is taken?

A. Yes sir.

Q. That is, the right (side) of the landscape shows right to you?

A. Yes sir.

Q. And the left (side) left?

A. Yes sir. If the autochrome plate is put in the diascope correctly; if not it would be the reverse of that.

Q. State whether or not, if there is any fusion of colors looking through the autochrome plate, that all disappears when you examine it through the diascope, and does or not the diascope reflect the landscape of colors just exactly as it appears to the natural eye?

A. Yes sir.

Q. Did you notice anything unusual in the appearance of the forest through which you went, for that season of the year?

A. No sir.

Mr. HILL: We except to the question and answer, as the
1703 witness has already stated he is not a forester.

Q. Have you or not gone through forests quite frequently?

A. Yes sir.

Recross-examination.

By Mr. HILL:

Q. You don't know what the condition the forests were in in June, July and August?

A. No sir.

Q. You don't know whether the foliage would have been greater at the time you were there than it was if certain conditions had not existed earlier in the season, do you?

A. No sir.

Q. You don't know whether there would have been more or less dead timber?

A. No sir.

Redirect examination.

By General FOWLER:

Q. These pictures, as I understand speak for September, when you were there?

A. Yes sir.

Recross-examination.

By Mr. HILL:

Q. You did not go into the crops and examine them; you simply took photographs of them?
A. As nearly as they would let us.
Q. Did you go in and examine for discolorations?
A. Only to make pictures.
Q. Only to make pictures? You did not go into the crops themselves and examine them?
A. No sir.

And further deponent saith not.

J. E. THOMPSON,
By R. S. C. HUTCHINSON,
Commissioner.

1704 Sworn to before me this November 9th, 1914.
R. S. C. HUTCHINSON,
[SEAL.] *Commissioner.*

(No mileage.)

Next witness, G. M. BENTLEY, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by General FOWLER:

Q. Where do you reside, Professor?
A. Knoxville.
Q. How long have you been living in Knoxville?
A. Ten years.
Q. What is your occupation?
A. State Entomologist and Plant Pathologist, and Associate Professor in the University of Tennessee.
Q. How long have you been a professor in the University of Tennessee?
A. In the fall of 1905—there are two classifications, assistant professor and associate. I was made associate in June, and was assistant four years prior to that.
Q. How long have you been Entomologist of the State of Tennessee?
A. As State Entomologist, six years.
Q. Where did you get your education?
A. At Cornell University.
Q. How long did you attend Cornell?
A. Five years.
Q. What particular courses in Cornell did you take?
A. The courses, relating to Batchelor of Sciences and Agriculture, and also Master of Arts.
1705 Q. Did you take any degree in Cornell?
A. Two degrees.
Q. What degrees did you take?

A. B. S. A. and M. A.

Q. In what year did you take your M. A. Degree?

A. In 1901.

Q. State whether or not you have made a special study of diseases of fruit trees?

A. I have not.

Q. To what extent have you been called upon in performing the duties of your position to examine fruit Trees?

A. From the standpoint of insect pests.

Q. Have you not then made special study of insect diseases of fruit trees?

A. Yes sir. In one sense, diseases would not be quite applicable there. Insect troubles. It would not be really from the standpoint of a disease. It would be——

Q. What do you call insect troubles of trees, if it is not a disease, what is it?

A. Well, it would hardly be called a disease; it would be insect affectations, or insect troubles; but disease would have more to do with bacteriological or funga-s affections.

Q. Have you come in contact more or less with San Jose Scale in performing the duties of your position?

A. Yes sir.

Q. For what length of time have you been examining trees affected with San Jose Scale?

A. Fifteen years.

Q. Have you or not often examined trees that were so affected?

A. Yes sir.

Q. Do you know that disease when you see it on an apple tree?

A. Yes sir.

1706 Q. State whether or not there has been submitted to you within the last two or three months, by Mr. Reese or some other person connected with the Ducktown Sulphur, Copper and Iron Company, some cuttings taken from apple trees?

A. Yes sir.

Q. Have you those twigs present?

A. I have.

Q. Describe to the stenographer those specimens submitted to you so the record will show a proper description of them.

A. In number, there are 35; all are apple cuttings excepting one that is cherry. Twenty four of these cuttings I found infested with San Jose Scale.

Q. Did that include the cherry or not?

A. The cherry was uninfested. It is a sour cherry.

Q. To what extent are those twenty-four specimens affected?

A. Three of them are badly infested. Two are highly incrusted with Scale, and show indications of severe injury.

Q. Do you know whether they were affected with any technical plant disease?

A. Yes sir, some of them had the leaf rust, apple leaf rust.

Q. Do you remember about how many of them had leaf rust?

A. Well, I did not examine especially with care along that line.

I dwelt chiefly on the insect side of it, and looking for Scale. Some of the leaves had to be removed. I think there are three or four specimens in there at present with leaf rust upon them.

Q. I wish you would describe what effect Scale has upon apple trees?

Q. At the beginning, you see no indications of trouble whatever, not until four or five years have gone do you see any indication of terminal dying of the limbs.

Q. What is the effect then, upon the tree?

A. The trees die from the outer limbs back, and frequently
1707 are absolutely killed.

Q. Do the leaves become brown?

A. Yes, and the tree sheds the leaves early, defoliages early.

Q. During what seasons of the year are trees generally killed by this Scale?

A. That is rather a difficult question to answer. Being weakened by scale, the present of a drouth will cause the dying of trees. It would be during the growing season I can make it that fine.

Q. Are they ever killed when the sap is down?

A. Rarely ever. The Scale at that time is present but the effect is not as serious.

Q. What is the Scale?

A. The Scale is a piercing insect, and sucking insect.

Q. And whereabouts do they reside in the tree?

A. It may be found anywhere, on the trunk, branches, old limbs and young limbs.

Q. Are they on the outside or on the inside of the bark?

A. They rest, of course, on the outside; the mouth parts are thrust through from the outside to the young growing wood. From this region they obtain their food, which is the sap of the tree.

Q. So they live on the sap?

A. Yes sir, they live on the sap.

Q. And are they in large quantities on the tree?

A. When they are highly infested, there are innumerable quantities there.

Q. And they kill the tree by sucking the sap?

A. Yes sir.

Q. How large are they?

A. A full grown one is about one-sixteenth of an inch.

Q. Visible to the eye?

A. Yes sir.

1708 Q. Do you know anything about the orchards in North Georgia, whether or not they are generally infested by the Scale, or not?

A. I don't know.

Q. Do you know of your own knowledge where these cuttings came from, the specimens you have described?

A. I do not, excepting they were brought to my office by ——

Q. Who brought them to your office?

A. Mr. Hensler, assistant to Professor Bain.

Mr. HILL: I object generally to all the testimony of this wit-

ness, upon the ground that it is cumulative, original evidence, and not in rebuttal.

Cross-examination.

By Mr. HILL:

Q. Professor, how long does it take the San Jose Scale to kill a tree?

A. To kill a peach tree, about three years; an apple tree, four to five years.

Q. Then if you saw an orchard or a tree in apparently a healthy condition on today, say, and tomorrow you saw and smelt sulphur smoke in that orchard, and within a period of three or four days leaves began to turn brown and fall off, the fruit began to fall, you would not attribute that to San Jose Scale, would you?

A. No, sir, the same tree being understood.

Q. The same tree.

A. No, sir.

Q. That could not be due to scale?

A. No, sir. It it was highly infested——

Q. I said a tree or orchard apparently in healthy condition.

A. Oh, yes, al- right.

1709 Q. If scale had been present long enough to have caused the leaves to have begun to turn and the tree to have begun to die, you could tell that and it would not be an apparently healthy tree or orchard, would it?

A. No, sir.

Q. You testified, I believe, that you do not know anything about the conditions in North Georgia, whether the scale is general there or not?

A. Yes, sir.

Q. All you have testified about are these branches which have been handed to you?

A. In regard to this particular case.

Q. You say that some of the leaves were missing from those branches, absent from them?

A. A few, yes. A few. A good many were taken off and examined for scale.

Q. Does the scale affect the leaf as well as the twigs?

A. Oh, yes, sir; yes, sir.

Q. Did you microscopically examine the leaves for cell injury?

A. No, sir.

Q. Or for injury to the cell contents?

A. No, sir.

Q. Or for the condition of the cell contents?

A. No, sir.

Q. The cell contents of a leaf are affected by sulphur dioxide, are they?

A. I could not say.

Q. Are you familiar with smelter injury?

A. No, sir.

Q. Or with the affect of sulphur dioxide on leaf, leaf cells and cell contents?

A. No, sir.

Q. So you don't know whether these leaves are affected
1710 by sulphur dioxide or not, the cell contents of a leaf?

A. I do not.

Q. Were they alive and green when they were brought to you?

A. No, sir. they were dried. Some were in a limp condition, not brittle as they are today, but just partly dried.

Q. Well, will the lowering of the vitality of a tree or plant make it more subject to plant disease, just as the lowering of the vitality of a human being makes it more subject to disease?

A. I have not made a study of that, and I am not prepared to answer.

Q. You are a pathologist?

A. Not especially so.

Q. I understood you to testify that you were a plant pathologist?

A. I am State Entomologist and Plant Pathologist in so far as—that is the official position. Of course we know a great many plant diseases, and our special work has brought those in, but I am not especially prepared to answer as a plant pathologist.

Q. Entomology is the study of plant diseases and insects which attach plants and trees is it not?

A. No, sir.

Q. What is it?

A. A study of insect pests.

Q. The study of insect pests alone?

A. And insects that are beneficial.

Q. You know nothing, then about the physiology of a tree? Plant physiology?

A. I do.

Q. Do you *you* know anything of applied plant pathology?

A. Yes, I do.

1711 Q. Then I understood you to testify a while ago that you knew nothing of the effect of cell contents and resulting sap, etc., in a tree by sulphur dioxide; would that not come under the head of applied pathology?

A. That would be a special case; that is a special case.

Q. Then if you are familiar with applied plant pathology and are an entomologist, I will ask you again if the lowering of the vitality of a plant or tree would not make it more susceptible to a disease or even an attack by some insects?

A. I am not positive of that. I could not say definitely.

Q. Do you know or not that when a tree is killed, insects immediately attach that tree, go into it and go to work?

A. In certain trees, they do, in certain instances.

Q. If the vitality of the tree was lowered to appreciable extent, even though the tree was still alive, would they not be more apt to attack that tree than they would one that was in perfect health and natural vigor?

A. It would depend on the insect, the type of insect.
Q. But it would make it more susceptible generally speaking would it not?
A. I cannot say so. It depends on the insect.
Q. You said that scale was present to a large extent on three of those specimens?
A. Yes, sir.
Q. On the others, it was not so appreciable?
A. Appreciable, yes; appreciable.
Q. I say, not so appreciable?
A. Not so highly infested.
Q. Is leaf rust caused by San Jose Scale?
A. No, sir.
Q. What is leaf rust?
A. A plant disease.
Q. What sort of a plant disease?
A. A plant disease affecting fruit, leaves, and leaf stems.
1712 Q. I mean, what is the source of it?
A. Well, it winters very frequently in developments on cedar trees and cedar apples.
Q. What is it caused by?
A. Fungus, fung-us growth.
Q. What sort of a fung-us growth?
A. Well, I am not prepared to answer.
Q. Then you don't know anything about the leaf rust except its appearance when you see it; I mean, you don't know what causes it?
A. I know the plant diseases that cause it and I know the result of the injury.
Q. How does leaf rust affect the leaf and the structure of the leaf?
A. It causes the leaf to be spotted and frequently colored.
Q. What color?
A. Varying colors. Sometimes yellow, and sometimes brown, according to the different stages, and there is extra growth w-ere this spot is, some additional growth to the leaf.
Q. Now will you show us a leaf on there, Mr. Bently, that is affected by leaf rust?
A. There is one, here; there is an envelope here. There is one leaf that we took off from this. I had it in an envelope. (Envelope produced, and handed to counsel.) Here is another one, if you wish it.
Q. You stated you were not familiar with smelter or sulphur smoke injury?
A. Yes.
Q. Can you distinguish them, the difference between what you call leaf rust, and the effect produced by sulphur dioxide on the leaf?
A. Well, leaf rust is such a distinct disease that while I do not know the nature of this sulphur injury it could not be comparable.

1713 Q. Take the leaf which I hand you, and state what is the matter with it.

A. I do not know.

Q. It seems to be affected, does it not?

A. The color may be due to the dried out condition.

Q. Do you not notice certain brown spots on that leaf?

A. Yes, sir.

Q. Do you know whether or not that is caused by sulphur dioxide attack upon the leaf?

A. I do not know.

Q. You do not know, then, what is the matter with that leaf?

A. No, sir.

Q. There appear brown spots on it; is that true?

A. There is discoloration there, but a tree afflicted with San Jose Scale might have leaves so discolored.

Q. Is that branch there scale infested?

A. No, sir, that is a sour cherry.

Q. That is not scale infested?

A. No, sir.

Q. Take this leaf here on this branch and state what is the trouble with that leaf?

A. I do not know.

Q. That leaf appears discolored does it not?

A. Yes, sir.

Q. Spotted with brown spots?

A. I could not call them spots. There are brown areas there.

Q. There are brown areas there?

A. Yes, sir.

Q. You don't know what causes that?

A. I do not.

Q. I will ask you to file that as exhabit No. 1 to your disposition.

1714 A. I file it as requested.

Exhibit No. 1.

Redirect examination.

By General FOWLER:

Q. In regard to this exhibit No. 1 that has just been filed, state whether or not the browning of the leaves as it appears on this exhibit, might be the result of dry weather?

Mr. HILL: I except to the question as being leading, and suggestive of the answer.

A. That would be a question for a pathologist to answer. Such I do not pretend to be.

Q. Is it or not your experience that dry weather will cause leaves on trees to brown?

Mr. HILL: I except to that, as the witness has stated he is unfamiliar with the subject.

Mr. FOWLER: He hasn't stated any such thing. Go on.

Mr. HILL: He has just stated it was a question for a pathologist.

Mr. FOWLER: No.

A. Yes.

Mr. HILL: I except to the question, for the further reason that it is leading, and suggestive of the answer.

Q. State further whether or not when a branch of a tree is cut from a trunk and the leaves dry up, do they or not more or less brown?

A. Yes, sir.

Recross-examination.

By Mr. HILL:

Q. When they dry up, they brown more or less uniformly do they not: are not the majority of the leaves on these branches all of them being dead, uniformly discolored?

A. I cannot answer. I cannot say definitely, there are so many things which enter into it.

1715 Q. On the branches which are now before you, all the leaves being dead or dried, isn't the discoloration uniform on each leaf in the majority of the leaves on those branches?

A. I cannot say that they are.

Q. What percentage of them are?

A. I should say nine tenths of them are not uniformly discolored.

Q. Nine tenths of them are not uniformly discolored?

A. Nine tenths of them are not uniformly discolored.

Q. What percentage of them are spotted such as the leaf which you have filed as exhibit number one?

A. I do not find any here just the same. That is a different growth, and the spots are in affected areas. In that, they are affected differently.

Q. What I mean by my question is this: Are not the majority of the leaves on those branches which you hold practically uniform in discoloration, as distinguished from the discoloration on the leaf of exhibit No. 1, which is spotted?

A. It naturally would be. It it a different growth.

Q. It has a different cause for the discoloration?

A. It may not be.

Q. Are not the leaves in the majority of the cases which are before you, discolored from drying up and dying?

A. Yes, either from natural causes or from diseases.

Q. I ask if the majority of them were not discolored from being dead or dried since they have been taken from the trees from natural causes?

A. Yes.

Redirect examination.

By General FOWLER:

Q. This exhibit No. 1, I believe you say, is a cherry?
A. Yes, sir.
Q. The other branches you have before you are apples?
1716 A. That is true.
Q. Do you know whether or not, Professor, the discoloration of this cherry is the result of drying up for the lack of sufficient moisture?
A. I do not.

And further deponent saith not.

G. M. BENTLEY,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 9th, 1914.
[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

(No mileage.)

Next witness, J. H. QUINTRELL, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by General FOWLER:

Q. Mr. Quintrell, did you make any cuttings from apple trees in the orchard or either Arnold or Northcutt in Gilmer County, Georgia.
A. Yes, sir.
Q. From which one of the orchards were they taken?
A. Arnold's.
Q. How many twigs did you cut from the trees, do you remember?
A. I could not say the exact amount. We taken as many as I could tote in a big tow sack from probably three of four hundred trees.
1717 Q. What did you do with them?
A. I carried them to the Ducktown Sulphur, Copper and Iron Company's office and turned them over to Mr. Sherman Reese.
Q. From what kind of trees were they taken?
A. Apple trees, and I cut one cherry tree in my armful, and Mr. Holt and another gentleman and the gentleman that was in charge of the orchard, were together.
Q. From what parts of the orchard did you make the cuttings?
A. Well, we set in at the foot of the hill, and we taken them by rows as we went up the mountain, until we got about all we could tote.
Q. Did you cut them from all parts of the orchard?
A. Yes sir, we cut them probably from every other tree.
Q. That is, did you or not cut out infected trees, or did you take them as you came to them?

A. No sir, as far as I was concerned, I did not really know an affected tree from one that was not affected. That is of course, the whole orchard looked about the same to me.
Q. Did you also go through Northcutt's orchard or not?
A. Well, I was in Northcutt's orchard, but I don't think they took any samples of it.
Q. What was its appearance as compared with Arnold's orchard?
A. Well, it was about the same, as far as I could tell.

Mr. HILL: We except to that, as being a conclusion.

Q. Whether or not they were affected by any disease, you did not know?
A. I did not know, sir.
Q. When did you make those cuttings?
A. I cut them on the 18th day of September, 1914.
Q. And on what day did you turn them over to Mr. Reese?
A. On the 21st.
Q. There are a number of cuttings that are before you now; is there any way by which you could identify them?
1718 A. Well, no, I don't know that — is. They look to be very much the same ones that I cut.
Q. But you don't know?
A. I don't know.

Cross-examination.

By Mr. HILL:

Q. You are the same Mr. J. H. Quintrell who testified in Chattanooga in this case?
A. Yes sir.
Q. On original taking of evidence for the defendant?
A. Yes sir.
Q. You say you made cutting from three or four hundred trees?
A. I suppose we did, as far as I could tell.
Q. Where are the rest of those cuttings?
A. I can't tell you. I turned the whole thing over to Mr. Reese.
Q. They are not all that you cut that are before you now?
A. No sir.
Q. This would not be one tenth of them, would it?
A. No sir.
Q. About what percentage of them, would these be?
A. Well, I could not say. I could not begin to say.
Q. It would not be one twentieth, hardly?
A. I don't hardly suppose it would. We had a large tow sack full.
Q. Three or four hundred cuttings you say?
A. I think so.
Q. There are about twenty-four or twenty-five here are there not?
A. There look to be.
Q. You didn't make any cuttings in the Northcutt orchard at all?

1719 A. None at all.

Q. At no other point except in the Arnold orchard?

A. That is all.

And further deponent saith not.

J. H. QUINTRELL,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 9th, 1914.

[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 230.

Next witness, SHERMAN REESE, recalled, for defendant, in rebuttal, having been duly sworn, deposed as follows:

Examined by General FOWLER:

Q. Have you been heretofore examined in this lawsuit?

A. Yes sir.

Q. Where were you examined?

A. In Chattanooga and here in Knoxville.

Q. State whether or not you have been present when all the depositions in this case have been taken?

A. I have.

Q. Have you heard the evidence given by the various witnesses?

A. Practically all of it, yes sir.

Q. Now with reference to the cuttings taken from Arnold's orchard, were you present when those cuttings were made?

A. No sir.

Q. Who delivered them to you?

1720 A. Well I send Mr. Quintrell and Mr. Holt to make these cuttings and take these samples, and they delivered them to me in the company's office at Isabella.

Q. About how many did they deliver to you?

A. I never counted them, but I divided them into three parts, and one part I sent to the United States Entomologist at Washington City, another part to the State Entomologist at Knoxville, and we have the other part here.

Q. Were they divided as nearly into equal parts as you could?

A. Yes sir.

Q. Do you know any thing about plant diseases yourself?

A. No sir.

Q. Did you undertake to pick out any special ones, to send to either of the gentlemen you have mentioned?

A. No sir.

Q. Did you get a reply from the United States Entomologist?

A. Mr. Renwick, the General Manager of the Ducktown Sulphur, Copper and Iron Company, did.

Q. Do you remember when he got it?

A. No sir, I do not know the date.

Q. Do you remember whether it was too late to put his name in the list of witnesses that was given to the other side?
A. Yes sir, I think so.

Mr. HILL: We except to the answer, as being indefinite and unsafe.

Q. You say you sent another bunch to the entomologist of the State of Tennessee?
A. Yes sir.
Q. Who was it?
A. Mr. Bentley.

Q. Do you recognize the specimens which are now present
1721 and which were present when Mr. Bentley testified, as being the ones you sent to him?
A. I do.
Q. To whom did you sent the other package?
A. To the United States Entomologist at Washington City; I do not know what his name is.
Q. The third, what did you do with the third?
A. I have got it here.
Q. You never sent it to anybody?
A. I never sent it to anybody.
Q. You did not have them examined by anybody?
A. No sir, they are here.
Q. Mr. Reese, were you present at Blue Ridge when these depositions were taken?
A. Yes sir.
Q. You were present when the photographs were introduced by Mr. Adams?
A. Yes sir.
Q. Are you acquainted with the various localities about which testimony was there introduced by the State of Georgia?
A. Practically all of them, yes sir.
Q. Had you prior to that time been through many of those localities?
A. A great many of them, yes sir.
Q. Have you traveled over the country around about Epworth?
A. Yes sir.
Q. And Madola?
A. Yes sir.
Q. And on Jacks River?
A. Yes sir.
Q. Had you been through those districts before that testimony was given?
A. I had, at different times.

Q. Now, state whether or not, after that testimony was in-
1722 troduced by the defendants, you made another trip through the vicinities to which that testimony related?
A. I did.
Q. When did you do that?

A. I commenced on the 3rd day of September, 1914, and continued until the 17th of September, 1914, inclusive.

Q. Whom did you have with you, if anyone?

A. Mr. James E. Thompson, of Knoxville, Photographer.

Q. Is he the photographer?

A. Yes sir, and Mr. B. H. Holt.

Q. For what purpose did you make that trip?

A. Well, our purpose was to make colored photographs showing the condition of crops and forests in Fanning County and Gilmer County, in rebuttal to the evidence of the State of Georgia against the Ducktown Sulphur Copper and Iron Company.

Q. Did you hear Mr. Adams testify as to the locations where his photographs were taken?

A. Yes sir.

Q. Did you have a copy of his testimony upon that subject made?

A. Yes sir.

Q. Did you take it along with you?

A. Yes sir.

Q. Did you cover the same territory that was covered by Mr. Adams?

A. As much as I possibly could, the same places. I could not locate them altogether, the very spots where his photographs were taken, for the reason that I had no way of absolutely locating it, but wherever I could I tried to locate and take a photograph on the same ground showing the several same places.

Q. You did not have his photographs along with you?

1723 A. No sir.

Q. They were already filed with the court?

A. Yes sir.

Q. Did you or not read his testimony with care in that respect?

A. I did.

Q. And were the photographs taken as nearly as you could of the same spots?

A. As nearly as possible, yes sir.

Q. Can you recall what photographs taken by Mr. Thompson were of the places that were photographed by Mr. Adams?

A. Yes sir, in part; I do not think I can, altogether.

Q. I wish you would designate, to the extent that you can, those photographs

A. Numbers 90, 91, 92, 93, *93*, 96, 97. There I am positive about. 96 and 97 that is, on the iron bridge across Fightingtown Creek, where they made the photograph showing the iron bridge. We made one at the same spot, only we turned our camera and made two. We took one east of that bridge, and one west.

Q. Do you know in what direction they took theirs?

A. Well, I take it that theirs was taken looking west from the fact that it showed the banisters of the iron bridge. We show the same thing, shooting the same way. Then we turned the camera and took one the other way, that is, east; they only show one, and we show two.

Q. What were the conditions existing there?

A. Well, Mr. Thompson, and I believe Mr. Vestal, swore there were some smoke signes there, brown leaves. They said that the leaves in their photograph that showed white were brown, and it was smoke, and out photograph shows for itself the conditions.

Q. Were there indications of dead trees there, as testified to by Mr. Adams?

1724 A. Nothing only old dead trees.

Q. Was there a large number of trees on which the leaves were brown?

A. Nothing at all, except I believe photograph 96 (witness here looked at said photograph) shows the fall tint on the left hand side.

Mr. HILL: I except to the statement that it shows the fall tint on the left hand side of the photograph, as being a conclusion.

A. (Cont'd.) I think that is a discoloration, the autum- tint on the foliage.

Mr. HILL: We except to the statement of the witness that it is discoloration of autum- tints on the foliage, for the reason that he has not qualified as an expert on plant pathology or discoloration.

Q. How long have you been acquainted with the forest, Mr. Reese?

A. Well, I have been acquainted with it all my life.

Q. Where were you raised?

A. I was raised in Ducktown; I have lived there pratically all my life.

Q. How old are you?

A. Fifty years old; going on fifty years old; forty-nine years old.

Q. Have you not been familiar with forests at some distance away from Ducktown?

A. Yes sir.

Q. Do you know what effect fall weather has upon the forests?

A. I think I do, yes sir.

Q. State whether or not forests begin to brown in the fall?

A. They do.

1725 Q. About what time of the year do the forests of North Georgia, both near Ducktown Copper Company and many miles away from it, thirty or forty miles away from it, begin to brown?

A. Well, I think the season would have something to do with that; it usually commenced in September. It might commence a little earlier than that.

Q. Now, what is the first appearance of discoloration of the forests in the fall of the year?

A. The leaves will turn brown, yellow.

Q. Do you remember what varieties of trees are first affected?

A. Well, I think the dogwoods, sourwoods, possibly would be about the first to show discoloration.

Mr. HILL: We except to that answer as being original evidence, and not in rebuttal.

Q. And do the different varieties of trees color at different times?
A. Well, as the fall season will come on, of course, all the foliage on all kinds of timber will show discoloration.
Q. Did you see anything unusual in the forests at that place, that is, where the photograph No. 96 was taken, for that season of the year?
A. Absolutely none. The photograph shows for itself.

Mr. HILL: We except to the answer as being a conclusion of the witness.

Q. Now do you recall any other pictures beside the ones you have mentioned, that were taken at places which had been photographed by Mr. Adams?
A. Yes sir.
Q. Please name them.
A. No. 91 was taken on the farm of John Pelfrey, and I think one of the other photographs was taken there at the same place.
1726 No. 92 was taken at the same place. No. 93 shows the Granny Marr Mountain where they had quite a number of photographs, three or four, I don't know how many.
Q. With reference to the forest of Granny Marr Mountain, where it was claimed by Mr. Adams there was discoloration, what was the condition of the forest when you were there in September?
A. Well, there was nothing particularly wrong except there might have been the fall tint on the foliage discoloration.

Mr. HILL: We except to that answer, as being a conclusion.

Q. Did you observe anything unusual about the appearance of the forest for that season of the year?
A. Not a thing. The photograph shows for itself.

Mr. HILL: We except to that, as being a conclusion.

Q. Is the condition that the forest was in at that time, properly represented by photograph No. 93?
A. It is.
Q. Do you remember how many photographs Mr. Adams had of that particular section?
A. No sir, I could not say positively how many; some three or four or five, though.

Mr. HILL: We except to the question and the answer, as the record is the best evidence.

Q. Please name other photographs of the places which were photographed by Mr. Adams.
A. 98 is another place where they took photographs at Mr. Couch's farm at Barnes Mountain.
Q. With reference to photograph No. 98, state whether or not it shows the conditions existing there in September when you were there?
A. It does.
Q. Was there any indication whatever of any smoke trouble there?

1727 A. Absolutely none.

Mr. HILL: We except to that answer, as being a conclusion of the witness.

A. (cont'd). I will say further that I think, as well as I can get at it, Mr. Vestal's crowd has taken photographs here where we took this one.

Q. What information did you have with reference to the photographing of that vicinity?

A. Well, I did this the very best I could. I read Mr. Adams' notes, his evidence, and went as nearly as possible to the identical places and tried as nearly as I could to take the pictures on the same ground.

Q. And that photograph there was taken for the purpose of duplicating as nearly as possible the place where the State of Georgia had taken?

A. Yes, sir.

Q. Did you have any other points photographed which had been photographed by Mr. Adams?

A. Yes sir, 99, showing meadow in the foreground and Barnes Mountain in the background, the same place showing Barnes Mountain where the Vestal crowd took views claiming smoke damage.

Q. How far is the place photographed in this picture from the point represented in No. 98; how far were those two places apart?

A. About a mile, I judge; possibly three quarters of a mile.

Q. Both of them were on Barnes Mountain?

A. Both of them were on Barnes Mountain.

Q. Was there any sign of smoke injury around or near that mountain?

A. I don't think so. The picture answers for itself.

Mr. HILL: We except to that as being a conclusion, indefinite and unsafe.

1728 Q. How many pictures did you take on Barnes Mountain, about how many?

A. Five, I think.

Q. Go ahead and name the others that you took of the places which had been photographed there.

A. No. 100.

Q. Where was No. 100 taken?

A. Looking through toward Barnes Gap, on Barnes Mountain, showing green house in the foreground and corn field and quantity of trees killed by girdling in the center of the picture.

Mr. HILL: We except to the statement regarding trees killed by *gilding* at the left of the photograph, for the reason that it is a conclusion of the witness.

Q. Had Mr. Adams photographed these places, or could you tell?

A. Well, as nearly as I could tell, he took pictures on Barnes Mountain there.

Q. This photograph shows a number of dead trees, did you examine those trees?
A. Well, I could see them, yes sir.
Q. Did you see them?
A. Yes sir.
Q. Do you know whether or not they had been girdled?
A. Well, yes, they showed to be killed by an axe-girdle for the purpose of cultivation.
Q. Do you mean cleared the ground?
A. Clearing the ground, yes sir.
Q. Did you see any evidences of smoke damage *ni* that vicinity?
A. No- a bit, no sir.

Mr. HILL: We except to the statement, as being a conclusion.

Q. Name other photographs taken where Mr. Adams had taken photographs.
1729 A. Here is another one, No. 104, which was taken one quarter of a mile north of Higdon's Store, where the Vestal Crowd took a photograph which is filed in the suit of the State of Georgia against the Ducktown Sulphur, Copper and Iron Company, looking west towards Riddick Mountain.
Q. Does that photograph correctly represent the situation when you were there?
A. It does.
Q. Did you see any effects of smoke injury there?
A. No sir.

Mr. HILL: We except to the answer, as being a conclusion of the witness.

A. (cont'd). The photograph shows for itself.
Q. I see a number of dead trees represented in this photograph. How long have they been?
A. My notes here show some very old dead trees, which have been dead for many years, also a few trees with yellow leaves which apparently had died from drouth.

Mr. HILL: We except to all of the foregoing answer as being a conclusion of the witness.

Q. Did you make notes when you were on the ground?
A. I did.
Q. Were the notes correctly made?
A. They were.

Mr. HILL: I except to that question as being leading, and to the answer as being immaterial and irrelevant, and having no bearing on the issues in the case.

Q. Did you not-ce these leaves, these trees which had dead leaves?
A. Yes sir.
Q. Are you familiar with smoke damage?
A. I am.

Q. Have you been familiar with it right around Ducktown
1730 ever since the furnace has been running?

A. I have been there all my life; I have been with the company twenty-three years.

Q. Did those trees there containing dead leaves, do those trees present the appearance of having been injured by smoke?

A. They do not.

Q. Do you know as a matter of fact that drouth will kill trees?

A. It will.

Q. Did or nor those trees have the appearance of having been killed by drouth?

A. They did.

Mr. HILL: We except to that as being a conclusion.

Q. How far is this place from the Tennessee Copper Company?

A. Five or six miles.

Q. How far is it from *of* the Ducktown furnace?

A. Three miles or more; three and one half miles. Nine or ten miles, betwixt eight and nine miles, I will say.

Q. Have you or not seen trees with dead leaves upon them in forests many miles, fifty or sixty or seventy-five miles away from Ducktown?

A. Yes sir.

Mr. HILL: We except to that as original evidence, and not in rebuttal of anything introduced by the state.

Q. Did you take any other photographs than those you have mentioned taken at the same place where Mr. Adams took photographs?

A. No. 105 was taken at the same place, looking Southwest, showing Flat Top Mountain.

Q. You say this is at the same place where 104 was taken except looking in a different direction?

A. Yes sir.

Q. Do you see any evidences of smoke injury there?

1731 A. No sir.

Mr. HILL: We except to that as being a conclusion.

Q. I notice that there is a dead tree about the center of the photograph. Do you know what caused the death of that tree?

A. Well, I was not to it, but I would judge it was drouth or lightning, and not smoke, I would feel perfectly safe in saying that.

Mr. HILL: We except to that answer as being a conclusion.

A. (cont'd). I feel safe in saying it is not smoke.

Q. Have you any other photographs that were taken of the places which Adams had photographed?

A. On the road from Blue Ridge to Ducktown we took a number; I could not locate him along there, only we took a number all the way from Blue Ridge to Ducktown, and then have a number taken at Epworth.

Q. How many did you take around Epworth?

A. We took eight or ten.
Q. Did you hear Mr. Vestal's testimony given?
A. I did.
Q. Did you hear the testimony of the other witnesses for the Complainant who testified with reference to Epworth?
A. Yes sir.
Q. State what vicinities around Epworth you photographed: that is, with reference to the vicinities testified to by Mr. Vestal and these other people.
A. We took photographs all the way along the route from Blue Ridge to Epworth, and from Epworth to Madola and Madola mine—No. 20 Mine, and Barnes Mountain.
Q. Were they sections with reference to which testimony was given by Mr. Vestal and other witnesses for the State of Georgia?
A. Yes sir.
1732 Q. In taking those photographs, did you pick out particularly favorable spots, or do they show the conditions that actually existed there in that vicinity?
A. They show the actual conditions as you look at this photograph.

Mr. HILL: We except to the above answer as being a conclusion.

Q. Did you take photographs of those places which had been less affected, or those which had been most affected; how was that?
A. We tried to get a representation of the true condition of the country every where we went.
Q. Is that true of the whole trip?
A. That is true of the whole trip, yes sir.
Q. Do or not these photographs which were taken around Epworth show the true conditions of that vicinity with reference to the other vicinities where photographs were taken?
A. Yes sir.

Mr. HILL: We except to the last two questions and answers as being a conclusion of the witness.

(The further taking of depositions was here adjourned until 1:30 o'clock p. m., the same day, at which time resumed pursuant to adjournment.)

Continuation of direct examination of SHERMAN REESE.

By General FOWLER:

Q. Do you remember whether you have named all the photographs of places that Mr. Adams claimed to have photographed, of have named them as far as you can recall?
A. Well, practically so; possibly not every one, but practically all.
Q. From the description in his testimony, could you exactly locate some of them?
1733 A. No sir.
Q. Did you or not photpgraph every place that you could locate with any degree of certainty?

A. Yes sir.

Mr. HILL: I except to that as being a conclusion of the witness.

Q. Now, in your travels on the trip, Mr. Reese, did you or not hunt out the sections of North Georgia about which testomony had been introduced by the State?
A. I did.

Mr. HILL: We except to the question as leading.

Q. Was that the only trip you made through North Georgia?
A. No sir.
Q. Since the testimony was given by the State?
A. No sir.
Q. What other trips did you make?
A. Well, Before we took the photographs, I made two trips, I haven't got the dates, but the latter part of August of this year up until the time we went to making the photographs, practically all the time, I was in North Georgia.
Q. What were you doing at that time?
A. Well, I was traveling for the purpose of getting evidence up in this case.
Q. And talking to the citizens in different sections?
A. Yes sir.
Q. State whether or not, in selecting witnesses, you have reference, or had reference to the territory about which evidence had been given by the State of Georgia.
A. I did.

Mr. HILL: We except to that question as being leading and to the answer as being a conclusion.

Q. Have you examined the notes prepared by Mr. Thompson?
A. I have.
Q. With reference to the photographs taken by him?
1734 A. Yes sir.
Q. Are those notes correct, or not?
A. Yes sir.
Q. Where you with Mr. Thompson when all of these photographs were taken?
A. All except one day.
Q. Were you on Turniptown Mountain at any time?
A. Yes sir.
Q. Since they have been taking proof for the State?
A. Yes sir.
Q. Have you been on Bush Head?
A. Yes sir.
Q. And on Flat Top?
A. Not on this trip, no sir.
Q. Have you at any time since the testimony was taken by the State, been on Flat Top?
A. Not on the Mountain itself, no sir.
Q. Have you been near Flat Top?

A. Yes sir.
Q. Did you examine the forests on Bush Head Mountain, and Turniptown Mountain?
A. Yes sir.
Q. When did you make that examination?
A. Well, every trip I was through that country I saw it, which would be the months of August, September, October—on various different trips.
Q. Did you observe the forests to see whether or not they were affected by sulphur smoke?
A. I did.
Q. What condition did you find?
A. Good.

Mr. HILL: I except to the answer as being a conclusion of the witness. He can state what the condition of the forest was, in detail.

1735 Q. Did you see any smoke injury at all in the forest in those mountains?
A. No sir.

Mr. HILL: We except to that as being a conclusion of the witness.

Q. How was it aroun*f* Flat Top Mountain, the places where you —?
A. Do you mean the conditions?
Q. Yes.
A. Good.
Q. Was there any evidence of smoke injury?
A. Not a bit.

Mr. HILL: I except to both those questions and the answers as conclusions.

Q. Were you in Cartecay Valley?
A. I was.
Q. Was that since evidence was taken by the State of Georgia?
A. Yes sir.
Q. Was there any smoke injury in there?
A. None at all.

Mr. HILL: I except to that answer, as a conclusion.

Q. Have you been around Ellijay and Ellijay Valley?
A. I have.
Q. Did you make observations to see whether or not there was any smoke injury?
A. I did.
Q. Was that since the evidence was taken at Blue Ridge?
A. Yes sir.
Q. What condition did you find there?
A. Good.

Mr. HILL: I except to that evidence as a conclusion.

Q. Did you see any evidence of smoke injury in those sections?

1736 A. I did not.

Mr. HILL: I except to that answer, as being a conclusion.

Q. Did you see any evidence of smoke injury around Epworth?

A. Yes, I saw on the 8th of June Professor Bain and myself were taking photographs in this case, for the direct evidence in this case, and on the 8th and 9th of June there was some signs around Epworth.

Q. I am talking about since the evidence was taken by the State of Georgia at Blue Ridge.

A. Well, no; I take it I did see a little smoke sign betwixt Higdon's Store and Epworth, south of Epworth, but I take it, and my judgment is, it was the same smoke damage that occur-ed on the 8th and 9th of June.

Mr. HILL: I except to this answer as incompetent, unsafe and a conclusion of the witness.

Q. Over how large a territory did those appearance extend?

A. Not very much, no sir.

Q. How many miles?

A. Well, I think it must have reached a couple of miles beyond Epworth towards Higdon's Store.

Q. Have you been over to Madola since September 1?

A. Yes sir.

Q. Did you see any signs of smoke injury in that vicinity?

A. No sir.

Mr. HILL: I except to that as a conclusion.

Q. Have you been on Jacks River?

A. Since this case——

Q. Yes.

A. No sir.

Q. Have you been around Mineral Bluff?

A. Yes sir.

1737 Q. Did you examine in that vicinity?

A. Yes sir.

Q. Have you seen any evidence of smoke injury in there since September 1st?

A. No sir.

Mr. HILL: I except to that as calling for a conclusion of the witness.

Q. Mr. Reese, have you examined the photograph of the Geological Survey of a portion of North Georgia made by Mr. Thompson and filed by him as exhibit A to his deposition?

A. Yes sir.

Q. Have you examined that part of the map which indicates the territory traveled over by you and Mr. Thompson?

A. Yes sir.

Q. Is that correctly represented on the map?
A. It is.
Q. Have you also examined the points which purport to indicate where the pictures were taken?
A. Yes sir.
Q. Are they properly represented on the map?
A. They are.
Q. In your travels, were you on any part of Mr. Shippen's lands the Shippen Lumber Company's lands?
A. Yes sir.
Q. When were you upon those lands?
A. Well, I could not give the number of the lots. I went and asked Mr. Frank Shippen for leave to go in his inclosure at his home and him and Mr. Ellis, both their enclosures, and take photographs, and offered to have him direct the photographs.

Mr. HILL: We except to the conversation, as not between the parties to the suit.

A. (cont'd) and he denied me the privilege of going in; and I went then on the L. & N. Railroad and took four, or five
1738 or six photographs over there of his residence and the enclosures around his place.

Mr. HILL: We except to the statement that Mr. Frank Shippen denied the witness the privilege of entering his premises, on the ground that it is hearsay.

Q. Did you go into the enclosure, upon the Shippen lands?
A. No sir. Well, I will say in taking these photographs on the 5th day of September, that I had Mr. Holt as a guide who knew the country. He took me through what I then knew as the Holt farm, and Mr. Shippen had me arrested for going through the enclosures.

Mr. HILL: We except to that answer as being immaterial and irrelevant.

Q. Which one of the Shippens had you arrested?
A. Frank E. Shippen.
Q. Did he have anybody arrested but you?
A. Yes sir, he had Mr. Thompson and Mr. Holt and Mr. Quintrell and Mr. Traver, the Chauffe-r running the automobile.

Mr. HILL: We except to this answer as immaterial and irrelevant and not in rebuttal.

Q. Why did he have you arrested?
A. Well, the charge in the warrant was misdemeanor.

General DRAKE: I except to that, for the reason that the warrant would be the best evidence.

Q. What did he have done with you, taken before a justice of the peace?
A. He had me taken before a justice of the peace and he bound

me to appear before the Superior Court of Gilmer County, and they got an indictment and tried me before the court.

Mr. HILL: We except to all that evidence as being immaterial and irrelevant, it not being the best evidence of the record. The record of the Court is the best evidence and also as not being in rebuttal of anything introduced by the State.

1739 Q. What was the result?

A. The result was they found me guilty on one charge, the bill of indictment contained three charges, and the jury found me guilty on one charge.

Q. What was the charge on which they found you guilty?

A. Really I cannot tell you.

Mr. HILL: We except to all that evidence, as being immaterial irrelevant, and not the best evidence; and for the further reason that it is not in rebuttal of anything offered by the State of Georgia.

Q. Were you inside of Mr. Shippen's enclosure at that time?

A. The land seemed to belong to a marble company. It is a curious name; I don't remember what it is. I suppose the Shippen fellows own stock in that company.

Mr. HILL: We except to the answer as being indefinite, uncertain, not being the best evidence; the ownership of stock being in writing; and for the further reason that it is not in rebuttal of any evidence offered by the State.

Q. Did you ask the Mr. Shippen for the privilege of going through their forest?

A. I did.

Mr. HILL: We except to that as being a conversation between parties not parties to this case.

Q. Which one of them did you ask?

A. Mr. Frank Shippen.

Mr. HILL: We except to that answer for the same reason.

Q. What was his reply?

A. He said, wait a minute and let me see my brother.

Q. Was that Will?

A. That was Will Shippen. He was gone about ten or fifteen minutes, ans came back and said, "no, I will not allow you to go into my enclosures and take any photographs and if you go on my wild lands, I will have you arrested."

1740 Mr. HILL: I except to that as being hearsay, as being immaterial and irrelevant, as a conversation between parties who are not parties to this case, and as being not in rebuttal of any evidence offered by the State.

Q. When was it that you had that conversation?

A. On the tenth day of September 1914.

Mr. HILL: We except to that, for reasons stated above.

Q. Before or after he had you arrested?
A. After he had me arrested.

Mr. HILL: I except to that, for the same reason.

Cross-examination.

By General DRAKE:

Q. You say that these pictures are a true representation of the points at which they were taken?
A. Yes sir.
Q. You mean by that, they are true to nature?
A. I think so, yes sir.
Q. I wish you would look at that picture in the case before you, and tell me where that picture was taken, and tell me what number it is. It is No. 100, is it not?
A. Yes sir. This was taken on the north side of Barnes' Mountain, looking toward Barnes Gap. It was taken by Mr. Thompson, the photographer.
Q. The same Mr. Thompson who has testified in rebuttal in this case?
A. Yes sir.
Q. That is a true representation of that locality?
A. Yes sir.
Q. Did you see a blue fence rail in a fence?
A. A blue fence rail?
Q. Yes, a blue fence rail.
A. I never did.
Q. You see an old worm fence there in that picture, do you not; did you ever see a blue fence rail in a fence out in the woods?
1741 A. A blue fence rail?
Q. A Blue one.
A. I don't know what you mean.
Q. Did you ever see a blue fence rail in a fence down there *chun* you were looking at it that day?
A. I don't know that I did, or did not.
Q. Don't you know that that picture shows every rail in that fence as blue, sky blue?
A. What is the matter with you?
Q. Please look and see if those rails aren't blue in that picture?
A. Well, no, I don't think they are blue.
Q. What color are they, please sir?
A. I think the picture was taken in the late evening, almost sundown, when, in fact, we had to hurry.

General DRAKE: I object to that answer, for the reason that it is not responsive to the question

A. (Cont'd) I am telling the truth about it.
Q. I know it, but I want you to answer the question, please sir.
A. I am going to answer it exactly to suit myself, Mr. Drake.

Q. Answer the question. I insi-t that you will not answer it to suit yourself. I insist on you answering the question.

A. It is the color of the fence rail, is all I can tell you.

Q. Do you swear that is the natural color of those fence rails?

A. I suppose it is.

Q. I don't want you to suppose, Mr. Reese. Please state if it is.

A. Yes sir.

1742 Q. A true representation of it?

A. Yes sir.

Q. What color does that appear to your eye to be from that photograph?

A. There is a different angle of the light that you may look at it, General Drake.

Q. Please do not answer about the angle of the light. Please state what color that appears to you, on looking at picture No. 100.

A. You can get two or three colors on it owing to the light.

Q. What color does it appear to be to you, looking at it at any light, then, if you want to put it that way?

A. Well, I don't know what color you would call—natural—just a fence rail.

Q. You haven't the gift of language sufficient to describe the color that that rail appears to you?

A. At one angle of the light you can make it look blue, yes.

Q. That is exactly what I want you to tell me, how it appears to look to you in that picture.

A. Yes, it does, one way of looking at it, it is blue.

Q. Tell me another way you can look at it.

A. It has a grayish look.

Q Tell me another way it may appear to you?

A. That is all.

Q. Now you started to speak a while ago about a picture being taken very late in the afternoon. I will ask you if the reflection of the light on the foliage at different times of the day will not make a picture appear differently, will it not make it really appear a different scene?

A. I think so, yes sir.

Q. Then you mean by that that the same view will not appear the same, at different times on the same day?

1743 A. Well, I am not a photographer. I do not want to go into that too deep.

Q. I am not asking you that. I am asking you from your observation if that is not true.

A. Well, I think that would be true, yes.

Q. Getting back to that irrelevant matter about your having been arrested; I will ask you if a jury of twelve men in Gilmer County did not pass on that issue and find you guilty of trespass, on malicious mischief, or misdemeanor, what ever you were charged with?

A. Yes sir.

Q. I will ask you what the judge fined you?

A. One hundred dollars.

Q. You went out there in an automobile and drove through a corn field and broke down the corn promiscuously?

A. No sir.

Q. Did you not go right square through a corn field?

A. Yes sir; not through a cornfield.

Q. What did you go through?

A. We went through a field, and there were a few rows of corn out in the road that we traveled.

Q. Did you break down any corn?

A. I don't think so.

Q. Was it not enclosed land?

A. Yes sir.

Q. There was no road there?

A. Yes sir.

Q. Did the State not prove in that case that you drove through the corn field and broke down the corn?

A. They swore that, but it was not so.

Q. How many men testified against you?

A. Two, I think, on that question.

Q. All those men swore lies? As you have expressed it here?

1744 A. If they said that I tire down the corn, they did.

Q. You just swore it, didn't you; you just said a little while ago that they swore that on you, didn't you?

A. Yes sir.

(Cross-examination continued by Mr. HILL:)

Q. Mr. Reese, you went out with Mr. Quintrell and Mr. Thompson, I believe, to take some photographs after the State's evidence closed in this case?

A. I had Mr. Quintrell with me part of the time.

Q. He was in the employ of the Copper Company for the purpose of this case?

A. Part of the time he was with me.

Q. And at the time he cut these branches on the orchard, he cut them at your request and while he was in the employ of the Ducktown, Sulphur, Copper and Iron Company?

A. Yes sir.

Q. You did not take any photographs except color photographs?

A. No sir.

Q. You stated, I believe, that Nos. 96 and 97 were the only two photographs that you could be positive about that were taken at the points testified to by Mr. Adams, at which his photographs were taken?

A. That is all I could be absolutely positive about.

Q. You knew as a matter of fact, did you not, that you got a photograph, that you have a photograph here taken at Pack's house, while Mr. Adams never introduced any photograph of the Pack house?

A. I could not say that Mr. Adams took a photograph there.

Q. No, but I say you identified one as taken at Pack's House?
A. Well, I was speaking of Barnes Mountain there.
Q. That was taken at Pack's house, showing Pack's house
1745 and the mountain, photograph No. 100?
A. No, I did not say Mr. Adams had made a picture, a photograph, of that.
Q. No, you didn't say that. I said you identified one as being taken there.
A. Yes sir.
Q. You don't say, now, and you don't know, that Mr. Adams ever took a photograph from that point?
A. No sir, no more than he purported to take Barnes Mountain.
Q. You don't mean to say that was taken from the same point at which he took his picture?
A. No sir.
Q. You don't mean that any other photographs of Barnes Mountain were taken at points from which Mr. Adams swore he took photographs?
A. Well, now, let me see, Mr. Thompson, and let's get the photograph.
Q. Photograph No. 89, at Couch's?
A. Yes. This photograph is one the north side of Barnes Mountain. There is No. 98. And then we made two, either two or three, from the south side, looking north on Barnes Mountain.
Q. But I say, photograph No. 89, you don't mean to say was taken from the point from which Mr. Adams took his photograph?
A. No sir, I do not mean to say that.
Q. And there are no others that you can identify positively that were taken from the same point as Mr. Adams?
A. No sir. I would not be positive as to the identical point.

Mr. HILL: I move to rule out all of the colored photographs introduced by the defense except photographs 96 and 97 as being not in rebuttal of anything offered by the State, and being immaterial, and irrelevant.

1746 Q. Now at the time that Mr. Quintrell, you and Mr. Thompson, went out, you say Mr. Quintrell was with you. Mr. Thompson was employed by the Company to take these photographs under your direction?
A. Yes sir.
Q. You directed him where to go, you being familiar with the country?
A. Well, yes, I was with him, but still I did not direct where every photograph should be taken.
Q. Had you had general charge of the party?
A. I had.
Q. He was busy with his camera, plates, etc.
A. Yes sir.
Q. These pictures were taken in September, Mr. Reese?
A. Yes sir.
Q. There had not been any frost then, had there?

A. No sir.

Q. You say, I believe, that you have lived around forests and been through them all your life?

A. Yes sir.

Q. You know it to be a fact that when the autum- tints begin on forest leaves, it affects them uniformly all the same species of tree begins to turn?

A. Every species.

Q. Are the oaks begin to turn about the same time, and all the chestnuts begin to turn about the same time and they turn uniformly?

A. No, I cannot say that, Mr. Hill.

Q. Do you mean to swear that you find an isolated chestnut tree, that you found one over here some place with all the leaves brown or red, and all the other chestnuts in the vicinity alive and green, without the autum- tint?

A. It might be so of certain trees, some might turn more quickly.

1747 Q. I am speaking of trees that are all of the same family.

A. I cannot say they would all turn.

Q. Speaking generally though all the chestnuts begin to turn about the same time, if you look at a chestnut growing, all the leaves will be practically the same color at a certain time of the year?

A. Well, I think that would depend on the health of the tree and the age of the tree.

Q. Take a grove of chestnuts generally speaking, won't the average color of that chestnut grove be about the same?

A. In a practical, way, yes.

Q. You will not find one chestnut over here perfectly red and another one 150 yards away which was gold, and another one where all the leaves were off, and another one over here with all the leaves perfectly green, all being chestnut trees?

A. I don't know how to answer that question.

Q. I will state it again. The first question is, generally speaking, isn't a forest affected uniformly by autum-?

A. Well, yes, in a way that is true.

Q. How is it not true

A. As I stated on direct examination the dogwood and sourwood possibly show fall tint discoloration quicker than the oaks.

Q. Did you see any oaks at all that had any fall tint or what you took to be fall tint?

A. Yes sir, the fall tint was coming pretty generally.

Q. On the oaks, or everything?

A. Yes sir, more or less.

Q. Look at photograph No. 96, at the small red spot to the left of the photograph, and tell me what sort of a tree that is?

A. That is a sourwood.

Q. Are there any other sourwoods in that picture?

A. Yes sir, two of them.

1748 Q. Do they show the same color?

A. Yes.

Q. To the same degree?
A. Practically so, yes.
Q. Do you find any other discolorations in the photograph?
A. No sir.
Q. Look at the trees in the center of the photograph. Don't you see brown spots all over those leaves?
A. Well, there maybe a little discoloration right in the center, by the dead tree there.
Q. On all those dead trees in the center, don't you see discoloration on the leaves.
A. No sir.
Q. What are those brown spots in there?
A. I don't see any brown spots.
Q. What is the tree just a little to the left and an inch and a half or two inches above the red spot that you identify as a sourwood?
A. I think that is fall discoloration.
Q. What sort of a tree is that?
A. Well, I don't know.
Q. What sort of a tree is that?
A. I judge it is some sort of an oak.
Q. Are there any other oaks in that photograph?
A. Yes.
Q. Do they show the same color?
A. No sir.
Q. In photograph No. 99, which you identify as showing part of Barnes Mountain and fall tint near the center of the picture, I will get you to state whether there are several trees showing discoloration of leaves?
A. Yes sir.
Q. Are there any anywhere else in the photograph?
1749 A. None except about three or four in the center. That is on Barnes Mountain.
Q. I hand you photograph No. 6, and ask you to state whether you ever saw a brown river, part brown and part blue?
A. A What?
Q. A river that was part brown and part blue?
A. The river was muddy.
Q. Was not all of it muddy?
A. Well, I suppose it might be the reflection of the blue sky in the water.
Q. Would a blue sky reflect blue, in a muddy river, part blue and part brown?
A. I have answered the question to suit myself on that point.
Q. You will not answer it to suit me, then?
A. No sir. I think that is what it is.
Q. Photograph No. 99, of Barnes Mountain; where was that taken from?
A. It was taken about half a mile west of Pack's house.
Q. Don't you know there was not photographs introduced by the State, taken from that point?
A. Well, no, I don't know that.

Q. Photograph No. 100, the one with the sky-blue trees, in it: You testified that all those trees were killed by girdling. Did you examine every tree there?

A. No sir. They all seem to be, though.

Q. That is just an opinion of yours?

A. Yes sir, that is my opinion.

Q. All that discoloration was caused by girdling, was it?

A. What kind of discoloration?

Q. Of the leaves there.

A. No sir.

Q. None in the picture?

1750 A. Practically none, no.

Q. What there is, was it caused by girdling?

A. No.

Q. What was that caused by?

A. What do you mean?

Q. That discoloration.

A. There is practically no discoloration in this picture?

Q. But what there is, was caused by girdling, was it?

A. There is none.

Q. There isn't any, at all?

A. Practically none, no.

Q. What do you mean; that there is none or practically none?

A. Well, now, point out to me where it is, Mr. Hill.

Q. Right here in the right, here, right here, and right here, and right here, and right here, (Indicating).

A. Well, that may be a little discoloration caused by fall tint.

Q. It does not extend over the whole photograph?

A. Practically none.

Q. It does not extend over the whole photograph, does it?

A. No sir.

Q. And you won't answer the way I want it?

A. Well, I am swearing to it.

Q. In No. 134, tell me what caused the discoloration of that, those pease?

A. Well, there is practically no discoloration on the pease.

Q. Practically none?

A. Practically none, no.

Q. What there is, what has caused it?

A. I suppose they would be ripening.

Q. That is all you think it is?

A. Yes sir.

Q. Photograph No. 104, you attributed the killing of

1751 those trees to lightning. Did you go up and examine those trees?

A. No sir.

Q. Did you get any nearer them than the camera?

A. No sir.

Q. How do you know what they were killed by?

A. That is my best judgment.

Q. That is the way you testified all through, that it is your judgment, is it?
A. In this it is.
Q. What about this patch of corn in Photograph No. 79, What caused that discoloration?
A. Well, now, The cabbage is all right there is no discoloration on that.
Q. You see no white edges at all?
A. Not a bit.
Q. No white edges at all.
A. No. They are green.
Q. Don't they show white in the photograph?
A. No, they look perfectly healthy.
Q. Don't they show white in the photograph; don't they look white there?
A. No, they look healthy and vigorous.
Q. Do they not show white in color, in that photograph?
A. It is a blue tint.
Q. It is a white tint, is it not, as a matter of fact?
A. No, it is a blue tint.
Q. What about the corn over there?
A. There is no corn here.
Q. You cannot say without reference to your noted, whether it is corn or beans shown in the photograph which you have, just back of the cabbage and behind the fence; is that true or not?
A. I do not think it is.
Q. Can you tell without reference to your notes?
A. I was looking at the thing right when the photograph was made.
1752 Q. Can you tell without reference to your notes, whether that is corn or beans?
A. It is corn and beans.
Q. You referred to your notes, did you not?
A. No sir, I have not yet; I am going to.
Q. But you could not tell whether it was corn or beans?
A. I did do it.
Q. What is the matter with the corn back there, those blades?
A. I don't think there is anything wrong with it.
Q. You think there is no discoloration there at all?
A. Well, it is fodder pulling time, and I guess it is turning.
Q. If corn is turning ripe, doesn't it begin turning at the end of the blade rather than at the base of the blade; don't you know that?
A. It would be both ways, I should think.
Q. Don't you know as a practical man, leaving out all reference to this case, that corn starts turning at the tip of the blade?
A. Well, it could commence turning all over the blade.
Q. Does it not begin at the tip?
A. Well, practically speaking, of course, yes.
Q. In that photograph, is it not already beginning at the base?
A. No, sir, I could not say that it is.
Q. Most of it?

A. No.

Q. Look at this one, No. 80. See if all that corn isn't beginning to turn at the base of the blade?

A. No sir.

Q. What causes the discoloration?

A. Well, it is the season of the year for fodder to commence to turn ripe.

Q. It is the season of the year for fodder to begin turning
1753 ripe, it is the season of the year for peas to ripen, and it is the season of the year for leaves to ripen, and it is the season of the year for leaves to fall off the trees; that is true, is it not?

A. Yes.

Q. And you cannot tell smoke damage as well in this time of year as you can in July and August?

A. Yes.

Q. How can you, when there is fall discoloration?

A. Before frost.

Q. I am talking about in September, you attributed all that to autum- tint, all this discoloration in these photographs?

A. I want to put my answer strong now, that there is absolutely no smoke damage in that country.

Q. None at all?

A. Now you have got it.

Q. Never has been.

A. No, that is my judgment, that there never has been.

Q. Since 1905?

A. In that part of the country, I do not believe there ever has been.

Q. And you have always sworn that? Is that not true?

A. I have always sworn what?

Q. That there has never been any damage there since 1905 in that part of the country?

A. I do not believe there has ever been any there at any time in that part of the country.

Q. Coming back to my former question: Those pictures that you have identified and introduced here, or that have been introduced, you have sworn that that discoloration in there was attributa-l- to fall tints?

A. Yes sir.

Q. You have sworn also that you did not get nearer to the trees than the camera?

1754 A. No.

Q. That is true, is it not?

A. That is true?

Q. Now, you are not a plant pathologist, and you are not a forester?

A. No sir.

Q. Now, I will ask you if there was discoloration from smoke injury or smelter injury, you being at the camera and no nearer the tree and in a season when fall tints are on the leaves, if you

could distinguish that as well in June or July when there is no fall tint?

A. Yes.

Q. You can distinguish it just as well?

A. Yes.

Q. And you can distinguish everything else about damage just as well as you could distinguish that?

A. I am giving you my very best judgment. There was no smoke damage in that country then or before that.

Q. And it is your best judgment that you could distinguish the smelter injury just as well among fall tints as you could when there were no fall tints?

A. Taking everything into consideration, I will say yes.

Q. Now, what do you take into consideration?

A. You take into consideration the general conditions of the country.

Q. What kind of general conditions?

A. Crops, ragweeds, and foliage on the trees, and then judging by the dead trees you have mentioned, my best judgment would say, that it is not smoke damage.

Q. How could rag weeds and crops affect discoloration of leaves?

A. I did not say they did.

Q. You said you take that into consideration in determin-
1755 ing whether there was smelter injury on leaves.

A. I sure did.

Q. How does that affect the discoloration on leaves?

A. I did not say that it did.

Q. Did you not say that you took into consideration in deciding whether the discoloration of the leaves was due to fall tint or smelter injury?

A. What I meant to say, and what I do say now, if I did not then say, is that if there is no damage to these things you have mentioned, why then I would give it as my best judgment that it was not smoke damage.

Q. I asked you, what affect ragweed and crops could have on your judgment as to whether a leaf discolored, was discolored by smelter injury or autum- tint.

A. I don't see how I could answer that question.

Q. (Question last above read).

A. Well, I will say this, if there were dead leaves, and ragweeds and other crops didn't have any discoloration, then it would not be smoke damage.

Q. How would you determine then if the ragweed and the other things were turned brown, and the leaves were turned brown in the fall, how could you distinguish, then, if there had been smelter injury between the smelter injury and the autum- tint?

A. How would I determine that? I do not get the question.

Q. If the ragweed and the crops had turned brown from natural causes in the fall, or from any cause, if they were brown and if the leaves of the trees were brown, if part of those leaves had been turned brown from fall tint, and part had been turned brown from smelter

injury, how could you distinguish between the two as to which had done what part of it?

A. I could not?

Q. You could not?

A. No sir.

1756 Q. Then you cannot tell as well in the fall when the autum- tint is on, as you can in June and July, when there is no autum- tint, can you?

A. No sir.

Q. Picture No. 90, what does that represent?

A. No. 90 was taken from near Burnt Storem *or* the Georgia line, showing the Tennessee Copper Company's plant in the right hand part of the photograph, the Ducktown Sulphur, Copper and Iron Company in the left hand, and Pack Mountain in the background.

Q. Does that truly represent the growth of plant life in that vicinity?

A. At that time, yes sir.

Q. In September of this year?

A. At the time it was taken, yes sir.

Q. That was in September, 1914?

A. Yes sir.

Q. That is in the accute zone of injury, how far from the plant?

A. About two miles and a half from the Tennessee Copper Company and six miles from the Ducktown Sulphur, Copper and Iron Company.

Q. Will you say or not from that photograph and from your knowledge of the conditions immediately surrounding the two plants, that the fumes emitted by the plants are injurious or beneficial to plant life?

A. Yes sir, injurious.

Q. *All* the fumes emitted by the plants of the Tennessee Copper Company and the Ducktown Sulphur, Copper and Iron Company are injurious or beneficial to plant life?

A. Well, If the Fumes strike the plant, it would be injurious.

Q. I am asking, are the fumes, of course taking into consideration that they must come in contact with plant life, bene-

1757 ficial or injurious?

A. Oh, if they hit them, they are injurious.

Q. If you see smoke in a vicinity and smell it, and it smells like the smoke that you smelt near the plants and works of these companies, and a short time thereafter there was injury to the forests and the plant life, over which that smoke had come, would you say or not that that was what injured them?

A. If it did do it, I would say yes.

Q. You mean if those facts were true, you would say "Yes"?

A. I mean, if those facts were true, I would say "yes".

Q. Now, Mr. Reese, have you ever studied map making and drawing to scale?

A. I have had to do with maps a good deal. What do you mean by that?

Q. I mean, have you ever studied the method of making maps of taking surveys for the purpose of making maps?
A. No.
Q. Did you ever make a map from a survey?
A. No sir.
Q. Did you ever run a line, make a survey and thereafter make changes in maps?
A. I have had charge of work where I had it done.
Q. How can you swear positively, Mr. Reese, that these points here designate the exact points at which the photographs that you have introduced were taken?
A. Approximately. I did not say exactly. Approximate—it is true.
Q. Approximately?
A. Yes sir.
Q. And on the scale they might be from a quarter of a mile to two miles different, mightn't they?
A. Well, no, no.
Q. They might not?
A. No sir.
1758 Q. How can you swear that?
A. Well, as I say, approximately. You are speaking of the positions on the photograph?
Q. The yellow points designating the points from which photographs were taken.
A. Well, approximately that is true.
Q. Do you know what scale that map is?
A. It is practically an inch to the mile.
Q. A difference of a quarter of an inch would make a difference of a quarter of a mile?
A. Yes sir.
Q. Do you mean to say that that is all within a quarter of an inch of being correct?
A. Well, no; I said approximately it is true, I did not say it is absolutely true.
Q. Don't you know that the gentleman who made the figures on that map said it had shrunk some, and that the only thing he could say way that it was approximately correct?
A. And that is what I say; it is approximately correct.
Q. There might be a difference of a fraction of an inch and that would be a difference of, or make a difference of, a fraction of a mile.
A. A difference of a part of a mile, yes sir.
Q. In photograph 93, in what direction was the camera pointed when that was taken?
A. Looking west.
Q. Looking west?
A. Yes sir.
Q. Towards what?
A. Showing Tumbling Lead, or what is locally known as Granny Marr Mountain.

Q. You don't know whether that was from a point from which Mr. Adams made his photograph?
A. No sir.

1759 Redirect examination.

By General FOWLER:

Q. Mr. Reese, in taking the photographs did you follow the roads and trails that are laid down on the map by the Government?
A. Yes sir. You mean those that are marked on the map?
Q. Yes sir.
A. Yes sir.
Q. Did you or not make a good part of the trip in an automobile?
A. Well, those routes that are marked there are roads; they are generally roads.
Q. After this map was prepared, after it had been photographed, and Mr. Thompson had placed those points on the map did you make a careful examination of it?
A. Yes sir.
Q. And did you observe the roads and creeks and other objects that had been laid down on it by the Government in its Survey?
A. I did, yes sir.
Q. Now, were the points properly represented with reference to those natural objects?
A. I think so, yes sir.

Mr. HILL: We except to that evidence as being indefinite and a conclusion, and we except to the question as leading.

Q. As far as you could ascertain?
A. Yes sir.
Q. Now, you were asked about trees turning in the fall: State whether or not all oak trees of the same species will turn exactly at the same rate, or will one tree begin to turn more quickly than another?
A. Some will turn more quickly than others.

Mr. HILL: We except to the question as being leading, and to the answer as being a conclusion, and without any facts
1760 stated upon which to base it.

Q. Suppose one oak tree is standing upon a hill side, where it dries out more quickly, and another of the same species is standing in a hollow where the moisture lasts up until in the fall, which one will brown the more quickly?
A. The one on the hill side, where there is not as much moisture as the one where there is moisture.
Q. Is that so with reference to other species?
A. Yes sir.
Q. You were asked if the light will not show differently on the forests at different times of the day, and hence that the photograph will show differently. State whether or not is it true that the forest

will appear differently colored to the natural eye according to the time of day?

Mr. HILL: We except to that question as being leading and suggestive of the answer.

A. Yes sir, it will.
Q. I believe you know Dr. Hedgecock?
A. Yes sir.
Q. State whether or not he is present and has been present during the entire taking of these depositions.
A. He has.
Q. And has been prompting counsel for the State of Georgia?
A. Yes sir.

Recross-examination.

By Mr. HILL:

Q. Mr. Reese, you stated that, in your opinion, an oak tree that was located on a hill side where the moisture did not remain long, in the fall, would brown quicker than one down in a valley where the moisture stayed.
A. Yes sir.
Q. What about three or four oak trees located on that same hill side?
A. What do you mean by that?
1761 Q. I mean, would one of those turn quicker than another?
A. I think that would depend upon the health of the tree.
Q. Generally speaking though, the change would be about the same?
A. It would depend upon the age and the health of the tree, would be my judgment.
Q. But, generally speaking, it would be about the same?
A. In a general way.
Q. There would not be as much difference between them as there would be between a tree up on a hill and one down in a hollow where moisture was?
A. No sir.
Q. Is that same thing not true as to smelter injury?
A. No, I think the smoke would generally hit it all alike.
Q. You mean to say then that protection, either by a hill side or by other trees, or any protection of the life and vigor of the tree, would have nothing to do with it?
A. Certainly it would.
Q. Then it would affect it about the same as fall tint?
A. Yes.
Q. And the hill side, if the trees were on the far side of it away from the plant, the trees would not be as susceptible to injury as on the near side?
A. I don't know.
Q. The Dr. Hedgecock you refer to is the pathologist of the United States Department of Forestry?

A. I don't know what you call him.
Q. He is a United States Government expert?
A. Yes sir.
Q. You don't know whether he was sent here at the request of the Governor of Georgia by the Secretary of Agriculture of the United States?
A. No sir, I do not.

1762 And further deponent saith not.

SHERMAN REESE,
By R. S. C. HUTCHINSON,
Commissioner.

Sworn to before me this November 9th, 1914.

[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

Mileage, 230.

It is stipulated by counsel for the State of Georgia and the Ducktown Sulphur, Copper and Iron Company that there is a person who is authorized under the Tennessee law to administer oaths and take depositions, before whom these depositions could have been taken, at Ducktown, Polk County, Tennessee, the place of business of the defendant Company, from three to four miles from the line between the state of Tennessee and the County of Fannin in the State of Georgia, and that the majority of the witnesses introduced by the defendant were from the counties of Fannin and Gilmer in the State of Georgia, and that the City of Knoxville, where these depositions are being taken, is one hundred and nine miles in a northerly direction from Ducktown, and one hundred and nine miles from the State of Georgia.

1763 *Certificate.*

I, R. S. C. Hutchinson, the Commissioner before whom the within depositions were taken, hereby certify that I correctly took in short hand and transcribed said depositions.

[SEAL.] R. S. C. HUTCHINSON,
Commissioner.

1764 In the Supreme Court of the United States.

No. 1, Original.

THE STATE OF GEORGIA
vs.
TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED.

To the State of Georgia:

Take Notice: That beginning on November fifth, 1914, at 10 o'clock a. m., and continuing as long as shall be necessary, at the offices of Fowler and Fowler, Empire Building, Knoxville, Tennessee, I will take the depositions of J. R. Herren, Ham Holt, Z. V. Kimsey, H. H. Chastain, W. P. Harper, T. N. Bennett, John Boatner, A. H. Pack, I. S. Davis, W. W. Thrasher, M. C. Goss, Linnie Clayton, Jason Akins, A. M. Johnson, M. S. Clayton, J. W. Clayton, B. H. Holt, W. T. Higdon, W. E. Rodgers, J. M. Davis, D. Q. Davis, W. D. Smith, Grant Orten, F. E. Garron, John Wilson, Robert Hampton, F. P. Largent, E. L. Stanley, The Entomologist of Tennessee, J. W. Clayton and Professor S. M. Bain, J. H. Quintrell, B. H. Holt and Sherman Reese, James E. Thompson, W. F. Lamoreaux, and others, to be used as evidence on the hearing of the motion heretofore made, of the State of Georgia, for a final decree against this defendant, said evidence to be taken under the permission given by the Supreme Court of the United States on October 19th, 1914, for this defendant to take evidence in rebuttal to the testimony heretofore taken by the State of Georgia.

DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LTD.,
By J. A. FOWLER.

1765 No. 1, Original.

THE STATE OF GEORGIA
vs.
TENNESSEE COPPER COMPANY and DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED.

I hereby acknowledge service of the within notice for the State of Georgia, and agree that no question shall be made with reference to the number of days said notice is given prior to the taking of the proof.

This October 29, 1914.

WARREN GRICE,
Attorney Gen'l of Georgia.

[End of Vol. II.]

SUPREME COURT OF THE UNITED STATES.
OCTOBER TERM, 1913.

No. 1, Original.

THE STATE OF GEORGIA, Complainant, vs. THE TENNESSEE COPPER COMPANY AND THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED.	IN EQUITY.

Comes now the complainant, by its counsel, and respectfully represents to the Court;

That at the October term, 1906, of this Court an order was entered in this cause awarding an injunction to the complainant as prayed for in its bill against the two defendants, the complainant being ordered to submit a form of a decree on the coming in of the Court in the following October; and

That at the October Term, 1907, on the coming in of the Court, complainant presented for the consideration of the Court a motion to postpone the submission and entry of the final decree until further application by complainant, which motion was granted by the Court, and the time to present the form of the final decree to be entered in the cause was by order of the Court enlarged as counsel might be advised, without prejudice, and on due notice; and

That at the October Term, 1913, of the Court complainant and the Tennessee Copper Company, one of the

defendants, presented for the consideration of the Court a stipulation and agreement entered into between them, and moved that they be allowed to file and make the same a part of a record in the cause, and that under the terms and conditions of the said agreement the cause be continued as to the Tennessee Copper Company until the October Term, 1916, of the Court, without prejudice. That on consideration of said motion the following order was entered in the cause:

> "On consideration of the motion for leave to file a stipulation of counsel for the respective parties herein, and that this cause be continued until the October Term, 1916.
>
> "It is now here ordered by the Court that said motion be, and the same is hereby, granted. October 20, 1913."

The said motion of the complainant and the defendant, the Tennessee Copper Company, as an inspection of the same will show, asked that the cause be continued only as the Tennessee Copper Company, and in no way contemplated the postment of the cause as to the other defendant, the Ducktown Sulphur, Copper & Iron Company, Limited and the complainant now moves the Court that the said order be modified so as by its express terms to continue the cause only as the Tennessee Copper Company, and that a final decree of injunction be now entered in the cause against the Ducktown Sulphur, Copper & Iron Company, Limited, in favor of complainant, in accordance with the decree entered herein on May 13th, 1907, a form for the same being herewith submitted to the Court.

THOMAS S. FELDER,
Attorney General of Georgia.

SUPREME COURT OF THE UNITED STATES.
OCTOBER TERM, 1913.

No. 1, Original.

THE STATE OF GEORGIA, Complainant, vs. THE TENNESSEE COPPER COMPANY AND THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED.	IN EQUITY.

The complainant having submitted to the Court a form of a final decree as against the Ducktown Sulphur, Copper & Iron Company, Limited, in conformity with the decrees of the Court heretofore entered in this cause, and moved that the same be entered; It is now here ordered, adjudged and decreed that the defendant, the Ducktown Sulphur, Copper & Iron Company, Limited, its officers, agents, servants, employees and confederates, and all persons acting under its authority, direction or control, be and the same are hereby perpetually restrained and enjoined from using, managing, maintaining, or in any manner operating any furnace, pit, oven, or any other appliance or copper reducing method, causing, generating, giving off, or discharging any foul or dense smoke, or any poisonous, noxious, unwholesome, or unpleasant gas, vapor, odor or fume, and from the diffusing of any foul or dense smoke or poisonous, noxious, unwholesome or unpleasant gas or vapor or fume, upon

the territory or lands of the State of Georgia or the lands of the citizens of Georgia, or upon the roads and highways of said State, or from generating, causing or diffusing any foul or dense smoke, or any gas, vapor, odor, or fume damaging, destroying or injuring the property of the State of Georgia or its citizens, or causing or producing any physical or bodily harm, injury, discomfort or inconvenience to the citizens of the State of Georgia, or depriving the State of Georgia or its citizens and inhabitants of pure air and sunlight; and the said Ducktown Sulphur, Copper & Iron Company, Limited, its officers, agents, servants, employees and confederates and all persons acting under its authority, direction or control, are hereby further perpetually restrained and enjoined as prayed for in complainant's bill, and are hereby ordered to desist and refrain from doing each and all those acts, deeds and things complained of and against which relief is prayed in complainant's bill.

It is further ordered, adjudged and decreed that the said complainant do recover of the defendant the Ducktown Sulphur, Copper & Iron Company, Limited, its costs in this suit to be taxed.

SUPREME COURT OF THE UNITED STATES.

October Term, 1913.

No. 1, ORIGINAL.

THE STATE OF GEORGIA, Complainant, *vs.* THE TENNESSEE COPPER COMPANY AND THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED,	IN EQUITY.

Brief of Argument for the State of Georgia on its Motion to Enter a Final Decree Against The Ducktown Sulphur, Copper & Iron Company, Limited.

A final hearing was had in this case, the issues were found by the Court in favor of the complainant, the State of Georgia, and the following order was entered in the cause:

> "This cause came on to be heard on the pleadings and proofs and was argued by counsel. On consideration whereof, it is now here ordered, adjudged and decreed by this Court that an injunction be, and the same is hereby, awarded as prayed. It is further ordered that the complainant may submit a form of decree on the coming in of the Court in October next. May 13, 1907."

On the coming in of the Court at the term following the entering of this order, the complainant, instead of submitting a form of decree, presented a motion to post-

pone the entry of the decree of injunction until the further application of the complainant, if such procedure could be had without surrendering any of the rights of complainant. For the convenience of the Court we copy the application, omitting the formal parts:

"Comes the State of Georgia, by John C. Hart, its Attorney-General, and respectfully represents unto the Court:

"1. That on the thirteenth day of May, 1907, this honorable Court delivered an opinion in the above-stated case, declaring, among other things, that 'if the State of Georgia adheres to its determination, there is no alternative to issuing an injunction, after allowing a reasonable time to the defendants to complete the structures they are now building, and the efforts they are making to stop the fumes. The plaintiff may submit a form of decree on the coming in of this Court in October next.'

"2. While the State of Georgia does stand upon her rights and adheres to her determination that the fume injury within her territory shall be remedied, it is not the desire of the State of Georgia to unduly press her rights for injunction in the premises.

"3. The defendants have represented to the State of Georgia that, as speedily as possible, they are installing extensive and new plants and devices to remedy the matters complained of in this cause, and that, by reason not only of the magnitude of the work, but the fact that the appliances are in a measure experimental, and along new lines, rebuilding, changes and alteration are required, and because of other delays, it will be impossible to fully install devices to remedy the evil complained of by the date set for the presentation of the decree herein.

"4. That by reason of these representations, the Legislature of the State of Georgia passed a resolution, approved the 27th day of July, 1907, which was as follows:

'No. 1.

'A joint resolution in relation to the case of the State of Georgia, by its Attorney-General, John C. Hart, vs. Tennessee Copper Company et al.

'WHEREAS, The Attorney-General did heretofore institute, in pursuance of authority of and direction by the Legislature of the State of Georgia, an original petition in the Supreme Court of the United States, said cause sounding State of Georgia, by its Attorney-General, John C. Hart, vs. Tennessee Copper Company et al., and having for its purpose the protection of the public domain from injury and destruction caused by poisonous fumes resulting from the smelting of copper ores at Ducktown and Isabella, Tennessee, by the said defendant Copper Companies; and

'WHEREAS, Said cause has since been passed upon by the Supreme Court of the United States adjudging the State of Georgia, in her sovereign right, was entitled to the injunction prayed for, and if she insisted upon her right it is the duty of the Supreme Court to enter a decree accordingly, after giving to the Copper Companies a reasonable time within which to install sulphuric acid plants or other appliances for eliminating the poisonous or injurious qualities of said fumes; therefore, be it

'*Resolved,* By the General Assembly of the State of Georgia, That the State of Georgia, through her Attorney-General, insist upon her right to a final decree against an indefinite continuance of the injuries to her public domain by the operation of said companies, but, recognizing and fully realizing the vast interests involved to the Copper Companies and to the people dependent thereon, the State of Georgia feels that she should act in a spirit of wisdom, justice and moderation, and having every confidence in her Attor-

ney-General, the matter of final procedure is left entirely to his discretion, we recommending that he proceed liberally in the matter, to the end that no unnecessary hardship shall be imposed upon the Copper Companies, and that no unnecessary time shall be allowed them to complete the structures that they are now building to stop the fumes, to the damage and injury of the citizens of Georgia and to her public domain.

'Approved July 27, 1907.'

"5. The Attorney-General of the State of Georgia during the last week of September, 1907, made a personal inspection of the plants and works of the defendants and found the representations of the defendants as to the installation of new devices and appliances and the magnitude of such undertaking to be true, and that immediate issuance of injunction would work a hardship upon the defendants and their employees and dependents, which might be avoided by the allowance of additional time.

"6. The State of Georgia is willing that further time, and until application of her Attorney-General herein, be allowed to the defendants to install their new plants and devices, provided complainant by such allowance shall lose none of her rights in the premises, and that by future application to this honorable Court, the decree provided under the opinion herein may be entered, or, if entered previously, may become operative and final upon the Attorney-General's application.

"Wherefore, complainant respectfully asks, if such procedure meets with the approval of this Court, that appropriate order be entered preserving complainant's full rights herein, but postponing the entry of decree for injunction until further application by complainant, due notice thereof to be given to defendants, or that a decree be entered in blank, which complainant is prepared to submit, to become operative and effective upon application,

after due notice by complainant, as the Court deems proper; otherwise that immediate decree be entered as provided for by the opinion of May 13, 1907, of this honorable Court."

Upon this application the following order was entered:

"On consideration of the motion to postpone the entry of final decree in this cause, it is now here ordered by the Court that the time to present the form of the final decree to be entered herein, be, and the same is hereby, enlarged as counsel may be advised, without prejudice, and on due notice. October 28, 1907."

As we view the present status of this case, there is nothing open to the Court but the framing and entering of the decree of injunction against the Ducktown Sulphur, Copper & Iron Company, Limited, the complainant having submitted a form of decree and moved that it be entered, and given due notice in accordance with the foregoing orders. The form submitted follows the prayers of the bill, and is in conformity with the opinion and order of the Court. The Court found that the complainant was entitled to the injunction and the same was awarded to it "as prayed for." If the form which we submit is not in proper language, it can be made so. At any rate, the complainant is entitled to have the final decree of injunction entered against the Ducktown Sulphur, Copper & Iron Company entered on the record as it stands, and without further action or hearings by the Court. All issues are closed as to this defendant, except the one of the framing of the final decree.

This defendant files objections to the entering of the decree, upon various grounds, none of which, we respectfully submit, have any merit. The main objections which are now urged were insisted on when the case was

heard on its merits, and have been finally disposed of by the Court. The defendant is simply trying to reopen the cause.

The position taken by this defendant that it is entitled to have evidence taken at this time on the right of the State to have its decree of injunction, we respectfully submit, is utterly without merit. The State of Georgia is in the same position now as she was on the coming in of the Court at the October Term, 1907, at the time she was directed to submit a form of a decree to be entered in the cause. Her rights have been protected by an appropriate order of the Court. The complainant asked for the delay in which to present a decree to the Court, not as a favor to itself, but out of grace to the defendants. The State was but pursuing the policy which she has adopted and followed in all her dealings with these two copper companies, that of liberality and moderation, and with the desire to insist on her full rights only as a last resort, and when all of her efforts had failed to protect her territory and citizens from damage.

This defendant in its brief contends that the decree now proposed is a nunc pro tunc one, and that it should not be granted as a matter of right, but that its allowance is within the discretion of the Court. We submit that the order is in no way nunc pro tunc. It has none the features of a nunc pro tunc order. It is not to correct any error, nor is its purpose to take the place of any order which was erroneously rendered or neglected to be entered. If the decree is entered as now proposed it will in no way be retrospective, but will take effect only from the time of its entry.

See 5 Words & Phrases, p. 4868.

Objection is made to the form of the decree because there are no specific findings of fact therein. We do

not understand that it would be proper for the findings of fact to be recited in the decree. Indeed, it would be against the rules in equity as promulgated by this Court to incorporate such in the decree. Equity Rule 71.

Objection is also made because it is claimed the decree does not point out any specific act which the defendant should refrain from doing. In answer to this criticism we invite inspection of the proposed decree. It follows the prayer of the petition and specifically directs what acts the defendant is restrained from doing.

Mention is made in the objections of the defendant to an Act of the General Assembly of Georgia, passed at its last session, in which the Governor was authorized to enter into an agreement with it for the depositing of a certain sum of money to take care of the current damages to the citizens of the State, similar to an agreement which the General Assembly had authorized the Executive to enter into with the other defendant, The Tennessee Copper Company. While we do not think this resolution has any part in the present discussion, we are perfectly willing for the Court to consider the Act. It is only another evidence of the liberality of the State and the failure of this defendant to appreciate the same. The resolution is reported in Georgia Laws 1913, page 1293. The General Assembly simply gave this defendant the same right which it granted to the Tennessee Copper Company, that is, the option to deposit with arbitrators a named sum to pay current damages to the citizens, the State in this event to allow further time in which the company could pursue its efforts to eliminate the cause of the damage altogether. This defendant saw fit not to avail itself of this privilege, and the State is forced, in order to protect itself and its citizens, to ask that the final decree be entered, and that the relief heretofore awarded by the Court be made effective.

The complainant and the Tennessee Copper Company, at the present term of this Court, presented a motion to make a certain stipulation entered into between them a part of the record in the cause, and prayed as follows:

> "The premises considered, the above named parties respectfully move the Court that the above agreement and stipulation be permitted to be filed and entered and made a part of the record in said cause, and under the terms and conditions of said agreement and stipulation as above set out, that the said cause be continued as to the said Tennessee Copper Company until the October Term, 1916, of this Court, without prejudice to either party."

On this application the Court entered the following order:

> "On consideration of the motion for leave to file a stipulation of counsel for the respective parties herein, and that this cause be continued until the October Term, 1916,
>
> "It is now here ordered by the Court that said motion be, and the same is hereby, granted. October 20, 1913."

The motion only called for an order continuing the entry of the final decree as against the Tennessee Copper Company, until the October Term, 1916, and did not ask to postpone the entry as to the other defendant, The Ducktown Sulphur, Copper & Iron Company. It may be that the order as passed only does this, as it says that it is "ordered by the Court that the said motion be and the same is hereby granted." But out of an abundance of caution, we have moved that the order be modified so as to conform to the motion on which it was granted.

Objection is made to this by The Ducktown Sulphur, Copper & Iron Company, but we cannot see how the re-

forming of this order will affect this defendant in any way. It was not a party to the motion on which the order was granted, and is in no way concerned in the order which was taken. The Tennessee Copper Company makes no objection to the reforming of the order. We ask for the reformation of the order at the term at which it was granted and at the first opportunity. The order, having been rendered at the present term, is still in the breast of the Court, and of course subject to be changed in such manner as the Court may deem proper.

1 Black on Judgments (2nd Ed.), sec, 305;
Bronson v. Schulten, 104 U. S., 410 (1), 26 L. Ed., 797 (1).

We respectfully insist that the State is entitled at this time to an injunctive decree against The Ducktown Sulphur, Copper & Iron Company, Limited, as a matter of law, and without further testimony or hearings, and that such decree should be in form as the one here submitted.

Respectfully submitted,

THOMAS S. FELDER,

Attorney-General of Georgia.

Office Supreme Court, U. S.
FILED
FEB 24 1914
JAMES D. MAHER
CLERK

NO. 1, ORIGINAL.

In the Supreme Court of the United States

OCTOBER TERM, 1913.

THE STATE OF GEORGIA, Complainant,
vs.
THE TENNESSEE COPPER COMPANY
and
THE DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED, Defendants. } IN EQUITY.

BRIEF AND STATEMENT OF FACTS, IN OPPOSITION TO COMPLAINANT'S MOTION TO SET ASIDE THE CONTINUANCE ENTERED IN THIS CASE ON OCTOBER 20, 1913, AND TO ENTER A FINAL DECREE ON THE OPINION HANDED DOWN ON MAY 13, 1907.

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In the Supreme Court of the United States

OCTOBER TERM, 1913.

No. 1—Original.

THE STATE OF GEORGIA,
Complainant
vs.
THE TENNESSEE COPPER COMPANY
AND
THE DUCKTOWN SULPHUR, COPPER
AND IRON COMPANY, LIMITED
Defendants

BRIEF AND STATEMENT OF FACTS, IN OPPOSITION TO COMPLAINANT'S MOTION TO SET ASIDE THE CONTINUANCE ENTERED IN THIS CASE ON OCTOBER 20, 1913, AND TO ENTER A FINAL DECREE ON THE OPINION HANDED DOWN ON MAY 13, 1907.

This case was heard on affidavits on February 25th and 26th, 1907, and an opinion was handed down on May 13, 1907, wherein the Court found in the most general terms, that defendants were committing a public nuisance in the State of Georgia, by emitting from their furnaces used in smelting ores, noxious fumes and gases, but in order to allow a reasonable time to the defendants to complete the efforts they were

making to stop the fumes, the Court postponed the entrance of a final decree till the October Term, 1907. The following entry appears upon the Minutes of this Court for that term:

> "Mr. John C. Hart, of counsel for the complainant, submitted to the consideration of the court a motion to postpone the entry of the final decree in this case.
>
> "October 21, 1907.
>
> "On consideration of the motion to postpone the entry of final decree in this cause, it is now here ordered by the Court that the time to present the form of the final decree to be entered herein, be, and the same is hereby, enlarged as counsel may be advised, without prejudice, and on due notice.
>
> "October 28, 1907."

On August 13, 1913, the Legislature of the State of Georgia passed a resolution, wherein after reciting a proposed agreement between the State of Georgia and the Tennessee Copper Company, it is further recited: "that the Governor be and he is hereby authorized and directed to enter into an agreement or stipulation with the Ducktown Sulphur, Copper & Iron Company (Limited), for the same length of time and under the same terms, conditions and limitations as are mentioned and provided by said contract with the Tennessee Copper Company, and with the exception that, the amount to be deposited by the said Ducktown Copper & Iron Company (Limited) for the arbitration of claims, shall be the annual sum of eight thousand, five hundred ($8,500) dollars, to be deposited and distributed under the same terms and conditions and with the same provisions and limitations as are provided in said contract with Tennessee Copper Company, as set out in said above mentioned resolutions.

"*Be it Further Resolved,* That in the event the said Ducktown Sulphur, Copper & Iron Company (Limited) shall fail, refuse or decline to enter into such contract with the State of Georgia, and to deposit said fund annually as above set out, the Governor is authorized and directed to make prompt application for final decree of injunction against said defendant, Ducktown Sulphur, Copper & Iron Company (Limited) in said cause in the United States Supreme Court."

On the 20th day of October, 1913, on the joint application of the State of Georgia and the defendant Tennessee Copper Company, that the cause be continued as to said company, the following entry was made:

> "On consideration of the motion for leave to file the stipulation of counsel for the respective parties herein, and that this cause be continued until the October Term, 1916.
>
> "It is now here ordered by the Court that said motion be, and the same is hereby, granted."

Complainant now moves that said order of continuance be set aside as to the defendant Ducktown Sulphur, Copper & Iron Company, and that the form of decree submitted to the Court be entered.

This defendant, the Ducktown Company, opposes said motion upon the following grounds:

I.

The cause was continued as to all parties and at the instance of the complainant, and no sufficient reason is shown why this order should be set aside and a final decree now entered.

The State of Georgia has not furnished this defendant with any document wherein it is claimed or even suggested that at the present time it is, or any of its citizens are, suffering the least injury or inconvenience in consequence of the manner in which defendant's plant is being operated. Nor, is it claimed or suggested that defendant is *threatening* to so operate its plant as to occasion any injury or inconvenience to the State of Georgia or any of its citizens.

Before setting aside the continuance, it certainly should be shown that it will work some injury to the State of Georgia or some of its citizens. There is no reason why the Court should re-instate the case upon the docket of the present term and burden itself with its consideration, unless it is shown that some benefit will arise therefrom.

II.

It is inequitable for the State of Georgia now to demand a final decree against this defendant.

The hearing on February 25th and 26th, 1907, was on affidavits, and it was realized by the Court, as appears from the language of Mr. Justice Holmes, in the opinion prepared by him, that this method of ascertaining the facts was unsatisfactory. However, in view of that adjudication it cannot now be questioned that defendant, along with its co-defendant, the Tennessee Copper Company, was at that time in some respect committing a nuisance in the State of Georgia; but the Court did not undertake to point out the extent of that nuisance or precisely in what acts it consisted. Manifestly, this was not done because it was believed that defendants were honestly endeavoring to remedy the situation, in which effort it was thought they would succeed, and time was given that they might make a thorough test of the method of manufacture which they hoped would render the smoke emitted innocuous. In this delay the State of Georgia was gracious enough to concur, and this defendant appreciates both the action of the Court and the concurrence therein of the State of Georgia.

At the October Term, 1907, complainant made application to the Court that the entrance of a final decree be further postponed, without any limitation of time as to when it might be presented, and an order in accordance with the application was entered, and *for seven years* this order has been acquiesced in. And certainly the State of Georgia, by so doing, has recognized that its rights are not being violated, and its citizens are not being injured or annoyed by this defendant to any material extent.

Defendant has acted in the best of faith in endeavoring to extract from its smoke all fumes which could possibly cause any inconvenience or injury in the State of Georgia, and it verily believes that it has fully accomplished the result intended; and hence it refuses to pay over to the plaintiff, without a hearing by this Court, the sum demanded by it or any other sum. When this court shall say it is not conforming strictly to the law in operating its plant and is encroaching upon the rights of the State of Georgia or its citizens, it will willingly adjust its operations to such order as the Court shall make. But it does not believe it just that it should be required to pay

any sum of money until there shall be a proper determination that it is legally liable therefor. And it respectfully submits that it is inequitable upon the part of complainant to present to this defendant the alternative that it shall pay for distribution among certain of its citizens $8,000.00, or any other sum, per annum, without an adjudication that they are entitled thereto, or that a drastic decree against it will be demanded of this Court, based upon conditions found to exist *seven years* ago.

III.

Decrees enjoining the further commission of a nuisance must be specific in their terms; and it was the intention of this Court, when it granted time for the defendants to change their methods of operation so as to conform to the law, that if a dispute should arise between plaintiff and defendants or either of them as to the efficacy of the method then being tested, such dispute should be submitted to the Court for determination.

While in the opinion handed down it was not said in precise language that it was the intention of the Court to examine into the changed conditions, yet in view of the well recognized principles of law governing cases of this character, and what was actually done, such intention should be implied.

A decree inhibiting the maintenance of a nuisance must be specific in its terms. It must not be broader than the facts warrant, and it must point out clearly what acts the defendant must do, or what he must refrain from doing. (29 Cyc., 1252.)

Valentine v. *Webb*, 84 Mich., 38-46-49, affords a good illustration of this rule. That was an action brought to enjoin the defendant from operating a slaughter house near the complainants' premises. The lower Court "did not order the defendant to cease using the place as a slaughter house altogether, but decreed that defendant refrain from using or employing the buildings and sheds erected on defendant's premises for the purpose of a slaughter house wherein to slaughter hogs *in such a way* as to be offensive to, or become a nuisance to, the complainants; and that defendant desist and refrain from using or employing the said enclosure or building for the purpose of confining therein quantities of same or other animals *in such*

a way as to be offensive to and to be a nuisance to the complainants, or any of them; and that defendant desist and refrain from using said enclosure, or any part thereof, as a drying yard in which to dry hair or bristles taken from the slaughtered swine."

With reference to this decree the Supreme Court said:

> "The trouble with the decree is that it fails to point out specifically what defendant is required to do in order to comply with its requirements. To adjudge that defendant should so conduct his business as not to be offensive is to give him no rule of conduct which the law had not before prescribed. The decree should have specifically pointed out the things that defendant was required to do, and to refrain from doing, in order to abate the nuisance which the Court found to exist."

And the Court suggested what the terms of the decree should be.

In the present case, as above stated, the Court made no specific findings of facts, and gave no directions whatever as to what should be embraced in the decree, but contented itself with the general statement that "without any attempt to go into details immaterial to the suit, it is proper to add that we are satisfied, by a preponderance of evidence, that the sulphurous fumes cause and threaten damage on so considerable a scale to the forests and vegetable life, if not to health, within the plaintiff state, as to make out a case within the requirements of Missouri v. Illinois, 200 U. S., 496." And when reference is had to the opinion in the case of Missouri v. Illinois, it is found that while the general principles controlling such cases were stated, yet it was held that no nuisance existed, and there was no application of those principles to a particular state of facts.

In fact, it is impossible in this peculiar kind of case, to enter a decree which can define exactly *to what extent* the defendant can emit smoke. It is entirely different from enjoining one from operating a powder factory in a populous neighborhood, or from keeping a pig sty or a livery stable near a home, or directing nuisances of many other kinds be abated. There the defendant may know exactly what he is required

to do. He must remove his powder plant, or take his horse out of the stable, or remove his pigs from the sty. But here, the Court cannot direct the defendant to cease emitting *all* smoke. And what is the value in enjoining it from emitting noxious fumes which *materially*, or *substantially*, injure vegetation in Georgia, or pollute or render noxious its atmosphere, because it would leave open as a question of fact when such injury or pollution shall become material or substantial. Hence, the Court now should investigate that question of fact, and determine whether any *material* or *substantial* injury or inconvenience is now being committed. If there is not, no injunction should be entered. But if there is, the Court should point out in what such injury or inconvenience consists, and direct what shall be done to remedy them.

IV.

In actions brought to enjoin the maintenance of a nuisance, if the nuisance is abated at any time while the case is within the jurisdiction of the Court, and it is apparent that such abatement is in good faith, and that its resumption is not intended by the defendant, a decree of injunction will be denied.

This principle, which is well sustained by the following authorities, further necessitates the implication that the Court intended to give a further hearing in order to ascertain the exact facts existing when the decree should be entered.

In 1 High on Injunctions, (4 Ed.) Sec. 752, it is said:

> "And where defendant disclaims the intention of continuing the nuisance and is using due diligence for its removal, the injunction will be refused."

In *Trulock v. Merte*, 72 *Ia.*, 510-513, the complainant asked the Court to enjoin the defendant from using a house on an adjoining lot as a stable and pig sty and a place for other domestic animals and fowls, etc. After the action was brought, the defendants kept the premises free from all accumulations of manure, etc., and sold the horse which created the disturbance, but continued to keep two hogs in the shed, and the offensive smell created thereby was carried to complainant's house. With reference to the situation then existing, the Court said:

"The injunction is much broader than it should have been made. As stated above, defendants are inhibited by it from keeping upon their premises any domestic animals which would cause unusual noises, whereby plaintiff would be disturbed in the enjoyment of his home. They were also forbidden to allow the accumulation on their premises of any manure or offensive offal, which would have the effect to interfere with the comfortable or convenient use by plaintiff of his premises. That plaintiff is entitled to be protected from the annoyances forbidden by the injunction is certainly true. But a court of equity will interfere by injunction to protect a right, only when there is apparent danger that the right will be invaded. The Court will issue its mandate forbidding the doing of a particular act, only when it is shown that the party is about to do that act. And we do not find in the record any evidence of an intention by defendants to keep upon their premises animals of the kind prohibited by the injunction; or to permit the accumulation there of the materials prohibited."

Perry v. Howe Co-operative Creamery Company, 125 *Ia.*, 415-417, was a case in which an injunction was sought to restrain the defendants from contaminating a stream of water, and it was found that the facts were sufficient to make out a case, when the action was brought. But it was further found that the nuisance had been abated before the trial in the Court below. In considering whether or not, under such a condition, an injunction should be issued, the Court said:

"Was the trial court in error in refusing an injunction, the nuisance having been abated? We think this question must be answered in the negative. Equity will interfere through the medium of an injunction to restrain a private nuisance in two classes of cases only. First, when it is made to appear that the act threatened, if done, would be destructive, or that the injury would be irreparable; second, that repeated or continuous acts of wrong are done or threatened. It is the rule in all such cases that, when the legal remedy of an action at law for damages is adequate, a complaining party must be remitted to such remedy. In the first of the class of cases in which equity will interfere

it is upon the theory solely, that the injury, if accomplished, will be such that the personal or property rights threatened cannot be restored to an original condition, or cannot be compensated by money damages. In the second class of cases equity interferes, that a multiplicity of actions for damages may be avoided. Now, where the situation as shown to exist at the time of trial is such as that all the damage that may be expected has been done, and the conditions are such that no repetition of the acts or conduct complained of is to be apprehended, there can be no occasion for the entry of an injunctional decree. There is no longer anything to enjoin, and courts do not indulge in the idle task of formulating and entering decrees that cannot be made effective, because there is no state of facts to which the same can have application. Pomeroy's Equity, Section 1357."

McCarthey v. Gaston Ridge Mill, etc., Co., 144 *California*, 542-546, was an action brought to enjoin the defendant, who was engaged in mining and milling, from rendering a stream of water offensive to the smell, unwholesome, and unfit for watering his stock, and so charged with sand as to injure his land by depositing the same thereon. It appeared that the defendant had been committing the wrongs complained of up till the bringing of the action, and in fact, until after issues had been submitted to a jury with reference to the damages committed, and the jury had returned its verdict, but thereafter the defendant had constructed a ditch, which prevented a further pollution of the water. The Court below entered no injunctive order, but taxed defendant with the costs, and from this order the defendant appealed. As to the action of the Court in not entering an injunctive decree, the Supreme Court said:

"The Court has found that at the commencement of the action the defendant was maintaining the nuisance complained of, and that it continued to maintain it until a time subsequent to the submission of the issues to the jury. It has also found that after the commencement of the action the defendant constructed a ditch for the purpose of diverting the flow of water in a different direction, and that thereby it had ceased to pollute the plaintiff's land. As

the nuisance had been abated at the time the Court rendered its decision, the occasion for an order for its abatement had ceased, and for that reason it was proper to deny the plaintiff's application for an injunction."

In King v. Morris & Essex Railroad Company, 18 *N. J. Eq.,* (3 *C. E. Green*), 397-399-400, it was sought to enjoin the railroad company from operating locomotives which emitted sparks. It appeared, however, that the company was making reasonable efforts to equip its engines with spark arresters, which would probably prevent further damage, and in determining when an injunctive order should be entered, the Court said:

"But before an injunction will be issued, the court must be satisfied that not only has injury been done in the past, but that the defendants intend to continue it; and from the charges in the bill and affidavits, it seemed as if these defendants had determined to go on regardless of consequences. But the answer and proofs satisfactorily show that there never was any intentional or wanton disregard of the rights of the complainant, or other persons along the line of the road, by the company or its principal executive or ministerial officers. Their coal burners were constructed by the best makers, and on plans that on many other roads had been a sufficient guard against fires; and since they discovered that fires were caused by them, they have assiduously endeavored to contrive such appliances as will effectually prevent any extraordinary danger. There were some of their sixteen locomotives as originally constructed, those with the bonnet screen above the smoke-pipe, from which large pieces of ignited coal could by possibility be thrown by a strong application of the draft from the exhaust pipe. These engines may generally, and on most roads, be safe; but when used on heavy trains, or steep grades, that require the whole power of the engine, the driver will naturally use the power placed at his disposal to overcome the difficulty, and put on the full draft, which would blow out the burning coals. The new appartus which the defendants have placed upon nearly all their smoke-pipes, and which they intend in a few days to place upon all, will, in my opinion, obviate all the evils complained of. It may,

however, still be possible that such sparks may escape as will cause fire, and the injunction asked for would be violated; it should not, therefore, be granted in that form. And, on the whole, I am of opinion that, under the circumstances of this case, no injunction, however guarded, should issue. But as there was reason for the action of the complainant at the time of filing his bill, as the defendants were then running engines that seem to have been dangerous, and as the injunction is refused on account of the action of the defendants, chiefly since the filing of the bill, and of which it does not appear that the complainant was apprised, the costs on both sides must be paid by the defendants."

The action of the Court below, which was approved and adopted by this Court in the case of *Arizona Copper Company v. Gillespie*, 230 *U. S.*, 46, 55, 57, is in accord with the principles announced in the foregoing decisions. That was a case wherein it was sought to enjoin the plaintiff in error from contaminating the Gila River. The District Court enjoined the company from in any manner depositing or suffering or permitting to be deposited, or suffering or permitting to flow into the waters of the said Gila River or into the San Francisco River or said Chase Creek, in such manner as they might be carried into the waters of said Gila River, any slime, slickens or tailings. Upon appeal to the Supreme Court of the territory, while the finding of facts as to the action of the company was affirmed, yet the judgment was modified so as to permit the appellant to construct settling basins, by means of which the tailings and slimes carried by the Gila River might be arrested, and be prevented from being deposited upon the farm lands; and in the opinion of the Supreme Court of the territory it was said that to enable the mining company to take advantage of any effort it might make in that direction, "it should be left to the discretion of the trial court hereafter upon a proper showing made to it temporarily to modify the injunction so as to permit of reasonable experiments being made to ascertain the probability of successfully erecting and maintaining settling basins to effectually dispose of the tailings and slimes without detriment to the lands lying under the canals *and with authority in the District Court likewise permanently to enforce or modify the injunction in accordance with the conditions as they shall be found to be.*" (p. 55.)

This action was approved by this Court in the following language:

> "The modification of the decree of the Trial Court so as to enable the appellant to complete the construction of the remedial works specified, and heretofore mentioned, met every reasonable equity which was asserted by it. It is in substantial accord with the decree of this Court in a somewhat similar case. Georgia v. Tennessee Copper Company, 206 U. S., 230."

The decree of the Supreme Court of the territory of Arizona thus approved by this Court manifestly meant, that if the conditions should be made better, the injunctive provisions should be limited so as to meet the situation existing. And if it should turn out that the nuisance had been entirely abated, and no further danger was threatened, the injunction should be dissolved altogether.

V.

Complainant's application is in effect to enter a decree nunc pro tunc after an interim of seven years, and the allowance of such an order is not a matter of right, but is within the discretion of the Court.

In Mitchell vs. Overman, 13 Otto, 62, this Court said:

> "Whether a *nunc pro tunc* order should be made, depends upon the circumstances of the particular case. It should be granted or refused, as the justice of the cause may require."

See also 23 Cyc., 840.

VI.

If it was not the purpose of this court, when it handed down its opinion on May 13, 1907, to again consider the facts before entering a final decree, such action became necessary, or at least highly proper, when by consent of all parties, and on application of complainant the entrance of a decree was postponed to determine the result of the efforts being made by defendants to conform to the general principles announced by the Court.

If it was not understood by the parties that only such decree should be entered as would exactly apply to the facts existing after defendants had had an opportunity to test their improved methods and that no injunctive decree should be entered provided the experiment should be entirely successful, why was the entering of the decree postponed? Why was it not then entered, but its enforcement suspended for such length of time as was deemed sufficient to enable defendants to thoroughly test their new method of operating their furnace? If that course had been pursued, and a dispute had subsequently arisen as to whether the nuisance had been abated, that question of fact would necessarily have been inquired into by the Court; but the action of the parties, and the acquiescence of the Court therein clearly indicated that such question should be settled before pronouncing a final decree, rather than by a trial to determine whether defendants were in contempt of Court for violation of the decree. One reason for taking this course, no doubt was the irreparable injury which, as will be hereinafter shown, would be done defendant by entering such a decree.

VII.

This defendant has succeeded in eliminating from the smoke emitted by its furnace all noxious elements which can possibly do injury to any kind of vegetable growth in the State of Georgia, or cause any material inconvenience or annoyance to the citizens of that state.

Upon this question, the following documents are presented and printed as an appendix hereto, to which reference is had without an attempt to here set forth their substance in detail:

Exhibit "A", the commission of W. M. Bowron by the Governor of Georgia, dated October 28, 1910, to inquire into the operations of this defendant;

Exhibit "B", Like Commission from the Attorney General of Georgia of same date;

Exhibit "C", Verified copy of the report of W. M. Bowron in the premises;

Exhibit "D", Affidavit of said W. M. Bowron, showing

the result of repeated subsequent investigations by him, his qualification, attainments, experience and conclusions pertinent thereto;

Exhibit "E", Report of Peter S. Gilchrist and J. M. McCandless, touching defendant's output, operations and results as respects Georgia territory;

Exhibit "F", Affidavit of Peter S. Gilchrist as to the correctness of said report.

Exhibit "G", Affidavit of Professor S. M. Bain, showing his attainments, investigations and conclusions pertinent hereto;

Exhibit "H", Affidavit of C. W. Renwick, this defendant's manager, disclosing its output, operations, efforts and certain facts and circumstances appertaining to the present application.

Exhibit "I", Affidavit of W. B. Miller exhibiting certified copy of verdicts in favor of defendant in the United States District Court at Chattanooga, Tennessee, in December, 1913, wherein the issue as to whether this defendant's operations affected territory immediately South of the Georgia line, was found in favor of the defendant;

Exhibit "J", Judgment of the Court in the case of J. P. and J. H. Vestal vs. Ducktown Sulphur, Copper & Iron Company, Limited.

It further appears from the affidavit of W. B. Miller, Esq., Exhibit "I", that actions for damages claimed to have arisen since the Court handed down its opinion in this case, and to property so situated that it is as likely to suffer damage from fumes and gases emitted by the defendant's furnace as any other property in the State of Georgia, have been tried in the United States District Court at Chattanooga, and the questions of fact submitted to a jury, who returned a verdict in favor of the defendant, and from the judgment pronounced thereon no appeal has been prosecuted.

In 1 High on Injunctions (4 Ed.) Section 740, p. 702, it is said:

> "And especially will relief be denied where in an action for damages resulting from the alleged nuisance there has been a verdict and judgment for the defendant."

And again, in Section 760, with reference to public nuisances, the author says:

"It is held that in cases of doubt, the question of the existence of the nuisance should be determined by a jury before granting the injunction; and where that issue has been settled at law by the acquittal of the defendant by a jury on an indictment for the maintenance of a public nuisance relief will be denied."

Hence, if it had appeared at the hearing that such trial had been had, which had resulted in a verdict for the defendants, that fact alone would have justified, if not required, the Court to dismiss complainant's bill.

VIII.

The form of decree submitted by the State of Georgia makes no specific findings of facts, is general in its character, without pointing out any specific act which defendant shall do or refrain from doing in order to conform to the law, is entirely too broad and drastic in its terms, and in fact in no respect comforms to the requirements of a decree in this character of a case.

The proposed decree sweepingly enjoins the defendant from doing about everything mentioned specifically or suggested in the original bill and its prayer. And if defendants had emitted and were still emitting noxious fumes and gases, which caused the injuries and inconveniences indicated by the decree, its requirements go far beyond the principles of law relating to either public or private nuisances.

It may be insisted that this Court, in the opinion handed down on May 13, 1907, announced a more stringent rule as to what constitutes a nuisance when a state in its sovereign capacity is complaining, and that in such a case the decree should be more drastic. But such contention is not at all justified. The language bearing on this question appears in 206 U. S., pp. 237-8.

The distinction between this and other cases involving nuisances there drawn by the Court consists wholly in the character of relief to which the State of Georgia is entitled. That is, if Georgia is entitled to any relief at all, it is to be a specific one, if she so wills, rather than a compensatory one. But the language of the Court shows that in determining whether or

not a case is made out and the character of the decree to be entered, if *any* distinction exist between this and a case between private individuals, the Court should here exercise more caution in those involving public nuisances. That the Court did not intend to hold that the State of Georgia could prevent all smoke from being carried over its domain is apparent from this language:

> "It is a fair and reasonable demand on the part of a sovereign that the air over its territory should not be polluted *on a great scale* by sulphurous acid gas."

Furthermore, specific reference was made to the case of Missouri v. Illinois, 200 U. S., 496, as setting forth the rule which governed the Court, in determining whether or not a nuisance existed, and the Court there certainly did not modify the principle, that there should be some *material* and *substantial* injury in order to justify a decree for the complainant. In that case the Court said:

> "Before the Court ought to intervene, the case should be of serious magnitude, clearly and fully proved, and the principle to be applied should be one which the Court is prepared deliberately to maintain against all considerations on the other side." (200 U. S., 521.) And the bill filed by the State of Missouri, was dimissed, because its allegations were not sustained by the evidence.

It is well recognized that the Courts should proceed with the greatest care in determining whether an obstruction or certain acts constitute a public nuisance, and should not extend their decrees with reference thereto beyond the facts clearly proven. In High on Injunctions, Section 760, it is said:

> "But to warrant an injunction against an alleged purpresture or public nuisance, it must clearly appear that it is such in fact, and if it be doubtful whether there is a purpresture the relief will be withheld."

Attorney General v. Delaware and Bound Brook R. R. Co., 27 *N. J. Eq.* (12 *C. E. Green*), 1, was an action brought to have removed a viaduct built across a navigable river, on the ground that the structure was a purpresture and public nuisance. The Court held that:

"If it were merely doubtful whether there is a purpresture or not, an injunction asked for on the ground of purpresture will not be granted. To warrant an injunction in such case it must be clear that there is a purpresture."

And again:

"In an action to remove an erection in a public river on the ground that it is an injury to the *jus publicum*, the common right of navigation, it must appear that a nuisance, in fact, exists, even though the erection be an encroachment on the soil of the state."

This Court has declared this principle with even greater emphasis. *Mississippi & Missouri R. Co. v. Ward*, 2 *Black*, 485-495, was an action brought by a private individual to have abated an alleged public nuisance, to-wit: a bridge over the Mississippi River. The Court in the first place held that under such circumstances the private party acts rather as a public prosecutor on behalf of all who are or may be injured. With reference to whether that part of the bridge within the jurisdiction of the Court below was a public nuisance, the Court said:

"Is the bridge West of the Illinois boundary an *unreasonable* obstruction, and therefore a nuisance? In considering this question we must be governed by the same rule on which a court of law could proceed in case of an indictment against the bridge company for committing the nuisance; and the rule is that if the abridgement of the right of passage occasioned by the erection was for a public purpose and produced a public benefit, and if the erection was in a reasonable situation, and a reasonable space was left for the passage of vessels on the river, then it is not an unreasonable obstruction and indictable. Rex v. Russell, (6 Boren & Crews, 566; 13 How., 623, 15 Wendell 133.)

"Then, again, the obstruction to navigation must be plainly a nuisance within this rule before it can be removed by decree. If the proceeding was by indictment and the jury doubted whether the obstruction was a nuisance or not, they would be instructed to acquit the defendant;

and so, if this case was referred to a jury to try the fact, and they doubted, they would be bound to acquit, and the same rule applies in a Court of Chancery when the Court ascertains the fact of nuisance. 2 Storey's Com. on Eq., 203-204."

The fact that the State of Georgia here sues in its own name and by authority of a special act of the Legislature, and to enjoin the operation in a certain way of a manufacturing plant situated outside its territory, does not alter these principles. The question remains, whether defendant is maintaining a public nuisance in the State of Georgia; and that question must be tried out *and the same kind of a decree entered, as if Georgia were suing one of its own citizens in its own courts.*

This is true, because, in the first place, Georgia has not attempted to enact a special law applicable to those who reside or operate a business outside the state whereby it is claimed a nuisance was committed in the state. Special Legislative authority to bring this action did not work a modification of the principles upon which it was to be tried, or the character of decree to be entered.

In the second place, without considering whether the State of Georgia could make a discrimination against those operating a plant outside the boundaries of its state, it is apparent that the decree here proposed would violate the Fourteenth Amendment of the Constitution, because, as some smoke might be carried beyond the Georgia line, it would prevent a further operation of defendant's plant, regardless of whether any *material* injury was being inflicted upon the citizens of the State of Georgia or not, and hence would deprive it of its property without due process of law.

IX.

A decree of the character of that proposed would be a continuous menace to defendant's existence, and very detrimental to its interest.

It is apparent that no case can present stronger grounds for refusing an injunctive decree when the reasons for its issuance no longer exists, than is presented by the present one.

The defendant is operating a large smelting and acid plant,

and has a large sum of money invested therein. It is essential that in carrying on its business, some smoke be emitted; and the winds may carry a very small proportion of that smoke over the State of Georgia. Hence, if a decree of the character presented be entered, there is a continued possibility that the State of Georgia might attempt to invoke its provisions, and have defendant's plant entirely closed up; or, might at least annoy it with proceedings for contempt, and necessitate its making proof of innocence.

It may be, from time to time, that this company, as other industries of this character do, will desire to raise funds to prosecute its business more extensively, or may deem it advisable to increase its capitalization, or issue bonds for the purpose of enlarging its plant. But, it is apparent that with its very existence menaced by a permanent decree of this kind, entered upon the minutes of this court, though lawyers may know that this Court would not enforce its provisions without proceedings regularly had, and clear and convincing proof, yet, it would be impossible to negotiate the sale of such bonds, or stock.

For the foregoing reasons, it is insisted that either the Court should refuse to set aside the continuance heretofore entered; or, if said order is vacated, should appoint an examiner to take evidence presented by both sides, and determine therefrom whether or not this defendant is now in any respect committing a public nuisance in the State of Georgia.

J. A. FOWLER,
Solicitor for the Defendant.
Ducktown Copper, Sulphur & Iron Co., Limited.

W. B. MILLER,
H. G. FOWLER,
Of Counsel.

APPENDIX

EXHIBIT A.

State of Georgia,
Executive Department.
Atlanta, October 28th, 1910.

Ducktown Sulphur, Copper & Iron Company, Limited,
Copperhill, Tennessee.

Gentlemen: I am sending Mr. William M. Bowron, an expert mining engineer, to your plant to make an examination in reference to the conditions there, of your operations in so far as they affect the people and the territory of this State. He goes as the agent of the State of Georgia and with my authority. I ask that you allow him every facility to go over your plant and to observe and examine into your work, giving him such data and information as will enable him to make a correct showing of the exact facts.

Yours very truly,
JOSEPH M. BROWN,
Governor of Georgia.

EXHIBIT B.

State of Georgia,
Attorney General's Office.
Atlanta, October 28th, 1910.

Ducktown Sulphur, Copper & Iron Company, Limited,
Ducktown, Tennessee.

Gentlemen: At my solicitation the State of Georgia has employed Mr. William H. Bowron to make an investigation as to the operations of your plant and the effects, if any, of the copper fumes upon the forests and crops of the citizens of this State, to the end that the true facts may be learned. I beg that you will accord him a full opportunity to make a thorough

investigation of the matter and that you will give him such information as may be necessary for him to make a full and complete report to this department. In this connection I wish to state that if the numerous complaints reaching me from the citizens of Georgia in and about your plant are confirmed, I shall have to take such steps as may be necessary to protect the citizens of Georgia. If these complaints are not well founded, then it is to the interest of your company to demonstrate the facts so as to put an end to the charges that are being made, and I trust you will afford Mr. Bowron full opportunity in this matter to make a thorough investigation.

I beg to remain, very truly yours,

H. A. HALL,
Attorney General.

EXHIBIT C.

Chattanooga, Tenn., Nov., 1910.

Hon. Joseph M. Brown, Governor of Georgia.

Dear Sir: As a consulting engineer I was informed by the Hon. H. A. Hall, Attorney General, that numerous complaints had reached his office relative to damages suffered by the citizens of the Counties of Fannin, Gilmer, Townes and Murray and adjoining counties, to their gardens, farms and products, works, homes and health as the result of the continued emission of poisonous gases and vapors from works in Tennessee near the State line. Works are at Copperhill, Tennessee, and are owned and operated by the Tennessee Copper Company, a corporation believed to be organized under the Laws of New Jersey.

Other works are at Isabella, Tennessee, some three miles distant from the first named and the works carried out at both is copper smelting. The latter works are owned and operated by the Ducktown Sulphur, Copper & Iron Company, an English corporation doing business in Tennessee.

The result of the consultation was that you authorized me to go to the district said to be affected and to the works in Tennessee and to ascertain the exact facts pertinent to the matter and to report them to you.

I accordingly went and as the works are extraterritorial, I did not know whether your written request for permission

to visit these details of their manufactures and to be furnished with all pertinent data would be honored or whether, as the works are involved in litigation over the same question of smoke damage, the directors in the Eastern and English offices might have imposed conditions of exclusion which would have prevented their local representatives from being as hospitable as their natural inclinations would have suggested. I therefore, determined instead of going direct to Ducktown and announcing my business to leave that to the last, so that my mission not being suspected, I would be at liberty to collect such data from the outside as would enable me to make a correct representation of the Status of matters, even if I were met with "polite refusal" at the gates.

It is here pleasant to be able to state that I was met with the utmost courtesy and no facts demanded were withheld at the time of my visit.

WHAT THEY DO AS A MANUFACTURER.

Taking as a short, recent and accurate report an extract from a paper prepared by Mr. B. Britton Gottsberger the then General Manager of the Tennessee Copper Company in October, 1908, at a visit of the American Institute of Mining Engineers:

> "The ore from the mines is delivered by the railroad to the smelters-bins, which have a capacity of 10,000 tons of ore, 800 tons of coke and ample space for the storage of flux and furnace products to be retreated. Charges are drawn from the bins in the side dump, cars of 44 cu. ft. capacity, hauled by electric locomotives. There are four tracks under the bins provided with scales for weighing charges.
>
> "There are seven blast furnaces, three 56-inch by 180-inch and four 56-inch by 270-inch at the tuyeres. The height from Tuyeres to charge floor is 18 feet and from tuyeres to sole plate, 3 feet 6 inches.
>
> "The small furnaces are provided with twenty six 5-inch tuyeres and the large ones with fifty 3.25-inch tuyeres arranged in pairs. On furnace No. 7 the space between each pair of tuyeres has been cut away, making the tuyeres

opening a slot 4 inches by 12 inches. Blast is furnished to the furnaces at a pressure of 50 ounces at the poer house and each furnace takes approximately 1000 cubic feet of air per minute per foot of length. The air consumption per ton of ore smelted is from 70,000 to 90,000 cubic feet.

"The furnace gases are discharged either into a brick lined balloon flue or into the concrete flue below and immediately behind the furnaces. Both flues discharge into a dust chamber 209 feet long, 30 feet wide, and 20 feet high at the end of which is a radial brick stack 325 feet high and 20 feet inside diameter. Dust is removed from the chamber by two conveyor belts placed in a tunnel under the chamber.

"The smelting is on two stages. The first consist of a concentration of the ore to a low grade matte, averaging about 15 per cent of copper. This matte is cooled in beds on the slag dump and then broken up and hauled to the smelter bins. The second stage is a concentration of the first matte to matte of converting grade. This can be varied at will, the present practice being to produce a matte of about 32 per cent of copper, which is easily handled in the converters. . . .

"The converters equipment consists of four electrically operated stands, and 15 converters of the trough or leghorn type 7 by 10.5 feet. Two 40-ton cranes handle the matte from blast furnace settlers to the converters. The converted metal containing about 99.4 per cent of copper is cast into pigs, each weighing about 210 pounds."

Much of this is irrelevant but is quoted for the sake of completeness and to have in convenient shape some authentic measurements from which we can calculate.

All the foregoing refers to the works of the Tennessee Copper Company at Copperhill, Tennessee, situated on the north bank of the Ocoee River a few hundred yards from the Georgia line.

The works of the Ducktown Sulphur, Copper & Iron Company at Isabella will be described separately and later on.

The ores used at the Tennessee Copper Company's works described above are local ores known by the names at the mines

whence they are extracted. They are as follows:

(Each being a compound of sulphur, iron, copper, and rock.) The analysis of each is given under each name in the relative quantities of each used. From this can be calculated the quantity of sulphur daily burnt.

Name of ore	Sulphur	Copper
Burra Burra	26.2	1.84
London	19.9	2.41
Polk County	18.4	1.99

These analyses were given me by the General Manager. The ores have been mined as under in the years quoted.

Year	Burra Burra	London	Polk Co.	Total
1901	71,057	35,342	39,721	
1902	105,820	85,840	59,109	
1903	120,006	92,266	75,153	
1904	88,510	31,716	24,763	
1905	131,652	63,375	17,802	
1906	201,726	72,212	89,603	
1907	225,040	60,557	98,034	
1908	not available			
1909	264,683	81,952	93,208	

figures published by Tennessee Copper Company.

These ores were smelted in the following average proportion: Burra Burra, one-half, and London and Polk County one-quarter each. This gives an average sulphur content for the whole melt of 22.65%.

The following figures are instructive.

439,365 tons of ore smelted in 1909 which means 101,704 tons of sulphur were burned during the year and 324 tons per day.

Complaints have been made, it appears, from time to time from the adjoining land owners of damage to lands and crops and in due course, litigation ensued. In the year 1904 the litigation seemed to have reached to the Supreme Court of the United States.

During that year the quantity of ore smelted was 241,855 tons, just about one-half of what was treated last year. This company promised the Supreme Court to use all means to abate the nuisance.

This is no new question.

"The Freilburg Smelting works were scientifically examined in the middle of the 19th century on account of the complaints of farms of the death of plants and cattle. So long as the metallic contents of the smoke were held responsible for the damage not much progress was made.

"A. Stockhardt was the first to recognize that sulphuric acid was the injurious agent. This caused the erection of the sulphuric acid works, now in operation for forty years, which utilized the greater part of the sulphuric acid. Yearly the injury diminished, until in the eighties a narrow strip next to the works alone suffered damage and the State purchased it."

Die Beschadigung der Vegetation nach Rauch, Haselhoff and Lindau. Chief Forester and Professor of Botany.

(Published by Bartrager Bros., Leipsic).

The European practice would appear to have been to keep the collection ahead of the generation. This is not the case at Copperhill. In the year 1906 and in the month of July the mammouth chimney 325 feet in height and 20 feet internal diameter was used, all the gas was turned into it and it passed out at an elevation of about 350 feet above the Ocoee River.

The then General Manager was most enthusiastic during its construction as to the benefit that would accrue to the whole neighborhood from the altitude of dissipation of the vapors. He was mistaken. The general experience of high chimneys has been duplicated at Copperhill; the spreading of poisonous vapors over areas previously unaffected.

To return to the process and the emission of vapors. When Stockhardt added sulphuric acid chambers to the works at Freiburg he only divided the open air roast heaps and calcined smaller portions in kilns. These kilns were comparatively small, holding a wagon load of ore at a time, the bottom was made of movable grate bars, covered with burnt ore, which protected the iron from the burning sulphur in the ignited ore that rested on it. As the sulphur burned out, new ore was added and by revolving the iron bars on which the whole mass rested, the

25

burned ore was shaken out at the bottom and the ore was kept at an average height. These kilns were built in tiers and delivered their sulphurous fumes into a central flue, which, in turn, connected with chambers of large capacity, lined with sheet lead, and whilst the vapors were on the way they were made to encounter iron pots which contained "nitre" or nitrate of potash or soda to which has been added strong sulphuric acid. The initial heat of the gases causes decomposition of the nitre and the result in the pots is sulphate of soda, or potash, as the case may be, and a gas of a dark orange color called "nitre gas" by the chamber men. This mixes with the sulphurous gases and by a chemical reaction, described in any text book, the sulphurous acid (sulphur dioxide) is converted into sulphuric acid.

These reactions were easily managed with a uniform flow of gas from the kilns or burners, little or no admission of air and low temperature.

The Copperhill problem was entirely different. At Freiburg and at all regular pyrites burning sulphuric acid plants the quantities could be controlled and the gas was about six per cent acid. At Copperhill the quantity of gas is enormous, variable in richness and with only a richness of about one-half what it should be for normal practice. Besides, the quantity to be dealt with is so large and the fluctuation in volume so irregular that the methods, sizes and conditions of the past were little guide to designing the necessary structures.

As an engineer I recognize and testify to the magnificent inventive ability by which the successive difficulties have been conquered.

As this report deals with a very technical subject it may be well to add a little here. The acid chambers at Copperhill are about 70 feet high and inside are more like public halls than chemical receivers. Steam is admitted and the sulphurous gas in presence of steam and hypo-nitric acid is converted to sulphuric acid which falls as a general rain to the bottom, whence it is removed. Now the expensive ingredient in this operation, is nitre; so to save this gas, after the gases leave the last chamber (in the Copperhill case, the twelfth) they are

led into the bottom of a tower. This tower is carefully packed with coke over which cold strong sulphuric acid is dripping. The rough surface of the coke exposes an enormous surface of acid to the vapors. Here the nitrous gases are absorbed. The waste gas is now freed from their acid are allowed to escape. This tower for absorbing is the Gay-Lussac, so called for the eminent French Chemist who suggested it. The nitre charged sulphuric acid is pumped to the top of another tower, packed with quartz or specially prepared porcelain plates, so arranged as to show a large surface and yet be permeable to the passage of gas. Through this, upward, are directed the hot smelter gases loaded with their sulphurous contents. From the top trickles the nitrous acid, the product of the other tower. Here it gives up the nitrous gas, on heating, which it absorbed, cold, in the other (Gay-Lussac) tower. The red hot gases in ascending, boil the water out of the dripping weak acid which has been pumped up for that purpose, and is flowed down the tower concentrating it, whilst the steam, mingling with the new gases and now freed nitrous vapor rises to the top to be cooled in suitable apparatus and admitted to the chambers, in its turn to give up its acid contents. The process is continuous. All the gases, red hot from the furnace are gathered into a huge chamber where they deposit their dust and solid contents and go thence to the chimney. As the very large quantity of gas is far beyond the capacity of the chambers, the portion of the gas is withdrawn by mechanically operated fans, which in turn, govern the circulation of the chimney.

The one point, outside words of praise for mechanical excellence of their work is the fact that notwithstanding their knowledge that hostile legislation was impending, they deliberately increased their production year by year with the full knowledge that the acid plant that they were erecting could not at best collect the acid fumes even then made.

The conclusion is inevitable with full view of all the circumstances, that these gentlemen have not acted in full faith in attempting to remove the poisonous gases from afflicting the agriculture and forest of the State of Georgia, except as far as there was profit in it, and under the same first thought of profit have increased their smelting so far beyond their acid

saving plant that the nuisance is as actual, as blighting in its effects, and as remediable as ever. Some illustrative history may here be inserted.

Three or four years ago the Trade Journal announced that the Tennessee Copper Company had been purchasing a large number of fertilizer factories in the South.

This was more probably an investment as individuals of the largest stockholders in said copper company. The corporation was formed under the laws of some State, I know not which, for the scope of my investigation was not located in places where certain information was forthcoming. The corporation took the name of the International Agricultural Corporation. It relieved the Tennessee Copper Company of the trouble of marketing its acid and collecting payments for it. The company runs its acid into huge tanks, whence by gravity, it is piped to tank cars as the orders come from said International Agricultural Corporation. Where the interests are identical, copper and fertilizer, business would dictate that one should be run to assist the other.

That would appear to be the case here. If more acid were made than is the case at present, it would demoralize the fertilizer market, and a leading official of the agricultural corporation is reported to have said so.

It, the acid manufacture, is admittedly profitable. The parties who are interested would appear to desire to keep it so. Rather than demoralize the fertilizer market, it pays to run the risk of possible penalties and adverse verdicts from the courts.

Some history is here necessary to be joined to statistics of what they have done.

The ore mined by this company is as follows for the past ten years:

1901	146,120 tons.	Roasting the ore in roast heaps.
1902	250,729 tons.	
1903	287,465 tons.	Suit filed in Supreme Court, Sept. Term.
1904	44,799 tons.	
1905	219,602 tons.	October began testing.
1906	363,741 tons.	Acid plant began January 1.
1907	383,631 tons.	Acid plant put to work, December.

1908 501,056 tons. December, plant no good, New Manager.
1909 439,843 tons. Plant doing good work after May.
April 19, 1909, new (2nd) unit begun.

This shows that the production of copper has gone on increasing with a temporary drop just after suit was filed in the Supreme Court of the United States.

As a further light on the subject, prices of copper are put here for the same years. The value is in cents per pound.

1901	15.85
1902	11.13
1903	13.23
1904	12.39
1905	15.26
1906	18.05
1907	19.23
1908	13.01
1909	12.07

In the same connection it will be advantageous to quote the present cost of making copper. This is extracted from the yearly report of the Tennessee Copper Company made by the General Manager. This report was shown me with permission to use the figures.

The cost of mining and smelting is also given and is added here in the interest of completeness.

	Per Pound Copper.
Mine development	.00381
Ore mining	.03428
Smelting	.04098
Converting	.00459
Railway	.00183
Engineering and Laboratory	.00120
General Expense	.00484
	$0.09153

or 9 1-8 cents per pound to produce. The present price of copper leaves a fair margin of profit. This is an inducement to push the make of copper. By the same report 14,352,954 pounds of copper were made during the year 1909.

The total ore smelting during the year from the mines was 439,365 tons. The figures could be extended indefinitely but for the purposes of this report the sulphur content are more in order.

Annual Sulphur in Tons Burned at Copperhill, Tennessee, for the years indicated and in the Ores mentioned.

Year	Burra Burra	London	Polk Co.	Total
1901	18,615	7,041	8,730	34,386
1902	27,623	11,382	9,776	54,881
1903	31,452	18,360	13,828	63,640
1904	23,189	6,311	4,556	34,056
1905	34,492	11,611	32,075	49,378
1906	52,904	14,369	16,487	83,760
1907	58,960	12,050	18,038	89,048
1908	details not available			
1909	69,346	15,308	17,050	101,704

In this connection it is only necessary to note that suit was brought in 1903 and the gas was not turned into the chambers for the purpose of saving until 1907, but the gas turned into the air was over 25,000 tons more than when litigation was started. Here are some data in the form of a letter from Mr. W. H. Emmons, the General Manager of the Tennessee Copper Company. (It is pleasant to note the personal courtesy and frankness of this gentleman).

We have now followed the tons of sulphur. In 1909 it was 324 tons per day. If the whole of this had been turned into sulphuric acid it would have to be calculated by the following figures, which I quote in extenso, (as I see in the evidence and affidavits which have come under my notice), that some confusion exists on these points.

A word on the subject of chemistry. Chemists have discovered that elements combined in definite proportions for instance, 32 pounds of sulphur would combine with sixteen pounds of oxygen and form 48 pounds of sulphur dioxide or sulphurous acid. Were there any excess of either ingredient it would be left uncombined. For sulphuric acid of the strength

shipped 1.75 which is mono-hydrated sulphuric acid + one part of water. This, following the chemist practice which is the only one that governs these calculations, we have

Sulphur 1 part	32
Oxygen 5 parts	80
Hydrogen 4 parts	4
	116

$=H_2SO_4+H_2O$

so it is evident that out of 116 parts of sulphuric acid of shipping strength of 60 Baume we have 32 parts of sulphur. From Mr. Emmons' letter the acid now made is 400 tons which would account for 110 tons of sulphur.

The other side of the calculation would have caused from the 39000 tons expected by Mr. Emmons to be mined in October, 1910, to have given 8775 tons of sulphur, which if made into acid would have amounted to 31784 tons. By Mr. Emmons' letter they actually made 9200 tons leaving a deficiency 22484 tons the sulphur of which wasted its strength on the forests of Tennessee, North Carolina and Georgia. The sulphur in the said deficit was 6201 tons for 238 tons per day. Should the wind be from anywhere north of due east or west, the gas from this amount of sulphur goes into Georgia.

The first condition of sulphur when it is burned is that of sulphur dioxide or sulphurous acid gas. This is a colorless gas with the familiar choking properties that attend its combustion. It corrodes, bleaches and by a quick chemical change becomes sulphuric acid in the presence of light and moisture, and in the dark if any nitrous gas or ozone is present.

Before leaving the subject it would appear that the unit capacity of the chambers is calculated on a hundred tons of sulphur daily. When the chamber capacity mentioned in Mr. Emmons' letter of November 30th is all in use, about two hundred tons of sulphur will be saved, leaving still a balance for the outer air and destruction of vegetation. I asked Mr. Emmons whether they were going to go on constructing chambers and he stated that that was beyond his province and would have to be dealt with by the directors and higher officials in New York.

The structures and appliances for the purposes of preventing the pollution of air are not and never have been adequate to the sulphur burned and still the production of ore and the consequent gases liberated by its fusion has steadily increased.

That the Tennessee Copper Company were alive to the deleterious nature of the gases with which they were flooding the country is shown by the fact that in this year when the growing season was at its height, the mining and smelting was reduced. In May to 26944 tons, in June to 20456 tons and in July 30493 tons. Mr. Emmons gave me the figures adding that they "make it up the balance of the years when the smoke would do no harm." Thus took it for granted that the growing season was the only period when foliage was susceptible to harm from sulphur dioxide.

This, I believe to be a mistake, as I shall show in a later part of this report.

We have in the month of October, 1910, the large quantity of sulphur, 22484 tons, mined, presumably smelted.

There is a slight allowance to make. The following analyses shows that some of the sulphur goes into slag.

SLAG MADE IN 1908.

	A	B
Silica	41.4	35.4
Iron	39.3	46.5
Alumina	4.4	2.0
Lime	8.2	10.1
Magnesia	2.7	2.5
Zinc Oxide	1.5	1.1
Sulphur	1.2	1.3
Copper	.28	.41

A is blast furnace slag from the smelter.

B is concentration slag.

So from 22484 tons we must deduct about 1½ per cent of sulphur. This leaves 22147 tons of sulphur that polluted the air in one month, the month of October, 1910.

What is sulphur dioxide—the condition which sulphur assumes when burnt.

Bloxams Chemistry defines it as "a very heavy colorless

gas, characterized by its odor of burning brimstone." After some remarks, interesting from a chemical view point but irrelevant, here he continues "another very useful property of sulphurous acid is that of arresting fermentation apparently by killing the vegetable or animal growth, which is the cause of the fermentation. The disposition of sulphurous acid to absorb oxygen and pass into sulphuric acid renders it a powerful de-oxidising or reducing agent."

No one who has passed through the region affected can doubt its power.

A property not mentioned in the above work, but well known, is the cohesiveness of this gas which diffuses with difficulty.

It is worth while to follow this a little further for it is direct evidence and not theory that I am seeking. I was at the Ducktown hotel October 1st, 1910. Rising early I found the whole basin inside the surrounding hills filled with a dense fog, which settling on the wood work, gathered in drops, which falling were constantly renewed.

I was at that time collecting facts concerning the poisonous gases of the district, their nature and origin. I employed myself in gathering these drops in a clean bottle and on returning to my laboratory, tested the water, so collected, for sulphurous acid. None was found. It had all taken the other atoms of oxygen from the air and become sulphuric acid. This is easily understood, for around the Glover towers there is always a leakage, more or less of hypo-nitric acid, so that in the quiescent conditions of the atmosphere, the condition of the whole basin were, in the presence of moisture, precisely that of an acid chamber. The strength of the sample collected was surprising. It was equal to 73 pounds of sulphuric acid per acre per hour. It is only just to remark that the fog rose as the sun's rays fell on it an hour or so later.

I cannot believe that this acidity was general. In U. S. Chemists, Haywood's testimony in the Supreme Court of the United States, I find October Term 1905, No. 13, p. 26, the following:

> "The ore (of this district) contains, on an average 19 % of sulphur in that the amount of sulphur dioxide that

could be obtained from this ore would amount to 475,000,000 per annum. All the sulphur, however, does not form SO_2 but part is retained in the slag. However, it seems safe to assume that 90% of the sulphur is given off into the atmosphere in the form of sulphur dioxide. On this basis, 427,000,000 pounds of sulphur dioxide would be given off annually. This would be enough to contaminate 42,750,000,000 parts of air with one part of sulphur dioxide to 100,000 parts of air ..... This contaminated air would cover an area of 189,752 square miles to a depth of 100 feet."

This assumes perfect diffusibility which my observations disprove. What all facts point to is a condition which may be described as follows: First, and by way of preface, after Mr. Haywood's visit the Tennessee Copper Company erected a brick chimney 325 feet high above the foundation and about 350 to 375 feet above the surface of the Ocoee River. Its inside diameter was 20 feet. These dimensions more resembled a railroad tunnel than the usual draft stack of individual works. From this cavernous orifice issues the column of smoke and this said column is of high temperature and is composed of nitrogen, air, carbonic acid, steam and sulphuric acid with sulphur dioxide. When this mixture gets into the moist upper air, the mixture is rapidly cooled at the outside contact of the gaseous mass and by the moisture available in the air, externally becomes sulphuric acid, which attracting more hydroscopic moisture, forms an envelope for the hot contained gases.

The wind action breaks the column into separate bodies of gas, each with its sulphuric acid envelope—practically, balloons or bombs, and may vary from microscopic sizes to, in quiescent conditions of air, large dimensions.

They sail off before the winds as other balloons, and so they lose their initial heat, gradually come down till contact with a tree, a fence, a house or a mountain, breaks the envelope and the gases pour out to blast all growing life in the area they can cover. Of course the gases are practically of the same strength as they were when they issued from the stack. Of course no one has been able to experimentally demonstrate this as the height of the stack precludes access. I asked the manager

of the works what the record showed was the acidity of the escaping gases, and was told that they never analysed them.

Turning to the literature of the subject, I find that in the case of Bliss vs. the Anaconda Copper Mining Company, the Montana Supreme Court, recognizing the progressive efforts made to render the fue gases inoxious, and the value to the community of the smelting company's operations, refused to hamper its work and returned a verdict for the defendant.

> "..... Few smelting districts are blessed with the dry air which favors, at the mountain smelteries, the distribution of furnace fumes over a wide area and a minimum production of hydrous acid flue gases."

The equities involved in this decision are dependent on exactly opposite conditions to those of the Ducktown area and surrounding district.

The emission of stray acid vapors from the works of the Tennessee Copper Company is abundantly proved by their own figures.

It is now in order to see what it does. As introduction, it may be well to state the European results on what is comparatively a new subject here.

(1). Even by strong and repeated additions of sulphurous and sulphuric oxides to soils, no essential increase of the sulphur content is affected, no change of the constitution of the soil takes place; and therefore injury to the plants through the soil is out of the question.

(2). Direct actions of free sulphurous or sulphuric acids on the roots of plants is improbable. Should an increase of sulphates occur through the action of smoke gases on the soil, this would have no injurious action upon the growth of plants and may be excluded from consideration.

(3). An injurious effect of plants can only occur when the acid gases come in direct contact with the leaf organs of plants. By injury of plants through sulphur dioxide the quantity of sulphuric acid in the plant is always increased; but as this occurs also when the content of sulphates in the soil increases, the observation by itself cannot prove injury through acid gases. The peculiar condition of each place must be considered.

(4). The susceptibility of different plants to sulphurous acid and sulphuric acids is different; and even the same plants show different degrees of susceptibility according to their location.

(5). Long exposures to even as small a quantity of sulphurous acid as one-millionth has been found injurious.

(6). The various quantities of sulphuric acid collected from the same surface of leaves of two different plants under approximately the same circumstances will not, of themselves, afford a measure of the injury done to the whole organism of the plants; on the contrary, the specific peculiarities of the several plants must be taken into account and submitted to proof.

(7). The cracks in the leaf organs have nothing to do with the absorption of sulphurous acid. The gas is not absorbed through these cracks but by the entire leaf surface, and the amount of absorption depends on the peculiar organization of the leaf.

(8). The effect of the absorption of sulphurous acid is to disturb the circulation of water. This appears in an increased extension of water and results in the drying of the leaves.

(9). The absorption of sulphurous acid, and consequent disturbance of the circulation of water in the plant, is, for the same proportion of sulphurous acid to the air, greater for a given time with light, high temperature and dry air, than with moisture, darkness and low temperature.

The sulphurous acid and acid smoke gases in general, are more injurious by day than by night.

(10). Morphologically, the effect of the sulphurous acid is shown by the formation of spots in the leaves, the death of the leaves and twigs, the retardation of the rings of growths, and finally the destruction of the plant.

(11). In the interior of the cell, plasmolysis is induced; the grains of chlorophyll are destroyed, and finally form with the plasma and other materials a brown and amorphous mass. At the same time, in most cases, especially if the injury has been gradual, tannin separates out, as can be detected by black or brown nodules in the cells.

(12). The mode of action of the sulphurous acid is to be conceived as a disturbance of the life of the plasma in the cell. It probably acts as sulphurous acid produced by the oxidation of the sulphurous acid by the oxygen of the assimilating chlorophyll grains in the presence of water from the cell sap.

(13). By the continuous action of rain or water, from other sources, the sulphurous acid of the dead leaf, organs, which has been taken out of the air, may be again eliminated. In confers, and probably other plants, where the organs are gummy or waxy, the sulphurous or sulphuric acid taken from smoke gases is not further neutralized in the mass, so that the recognition of smoke injury is impossible.

(14). No absolutely sure botanical means exists of recognizing the injuries from sulphurous acid, but it is possible only through the complex or outward or interior injuries, to conclude their presence. The surest proof is the determination of sulphuric acid.

These fourteen conclusions were quoted from a general summing up of the whole European knowledge of the subject by Haselhoff and Lindau. This is *the* authority for German practice.

As will be seen, the determination of plant injury is a complicated one and as the leaves had fallen before I could reach the ground after my employment, the investigation was rendered more difficult.

I took blades of fodder from different points but found contradictory results afterwards explained by finding that the corn that showed high sulphates had been manured with commercial fertilizer—in which sulphuric acid is a component.

As my knowledge of the Ducktown smoke has extended over several years, I can say from personal knowledge that the gas, which I have seen rolling down the Ocoee in waves, business calling me to Parksville, Tennessee, I saw some vegetation which was said to have been blasted by the smoke. It was wilted and as far as the leaves were concerned, probably killed. As an old microscopic worker I knew that the leaves structure unites the breathing and partly the digestive powers of an animal.

The carbon that enters into plant growth is absorbed

through the leaves and decomposed, the carbon being assimilated into sap and then into cell growth, the oxygen being returned to the atmosphere.

The leaf of a plant has an upper surface, the epidermus which has myriads of pores of microscopic size. Where acid vapors are brought to the epidermus exactly the same action takes place as when damage is done to the skin of an animal. In the one case the flow of sap rushes to the place affected to try and wash the acrid attack out of the pores, in the other case the blood rushes to the point attacked with repair leucocytes and serum to minimize the attack and begin repair.

Plants are of lower adaptability than animals. Their abstraction of soil ingredients and moisture is not elastic. When the quality of the sap is changed by the withdrawal of its moisture, it no longer is suited for cell production necessary for growth. Nor is this all. The specific action of sulphur dioxide (which is the same as sulphurous acid) is that of corrosively killing by oxidation. When this action takes place in the delicate microscopic mouths of the breathing pores, they locally die. They can no longer inhale carbonic acid and give out oxygen. Growth is arrested. One attack may be outgrown, but cumulative attacks prove fatal.

The balloons or bombs of acid gas sent from the high chimneys may and do travel miles before the cloud reaches the earth. When it does, vegetation suffers. I have stood at Blue Ridge, Fannin County, Georgia, about ten miles in a straight line from the Copperhill stack and have seen the gray circular clouds, issuing like a gigantic endless rope, which floating high over my head and hardly distended, was carried on its poisonous mission southward to interior points of Georgia.

On my last trip I found the winds that prevailed were from the south and the apparatus I had prepared for sampling the air at different points, had no opportunity of encountering the sulphur fumes. I consequently put myself in the way of getting all the local information as to the extent of damage. At first I got the names of my informants and gave mine, but I soon found that the information was colored by the thought that either the local men did or did not want to be a witness or that he wanted a job at the mines or he had a suit against

them or was preparing one. I adopted a different plan. I am known largely in the immediate district in connection with some land matters in North Carolina, and incidentally asked, as for information as to whether the damage was actual, and if so, what its extent was. I discussed it in that way with several hundred of the citizens of North Georgia. The majority said that the forests were dying fast as the result of the far spreading of the fumes into districts previously untouched.

The damage was reported from points as far distant as Tessantee Gap south of Blairsville; as Murphy, North Carolina; as the farm lands Tacoa; as the valley of Talona; even as far as Talking Rock, Georgia; and in the timber lands of Jack River basin and the hills of Murray County. My informants were not scientific men. They "smelled the smoke since 1906 and their timber begin to die."

One farmer, on telling his experience, seemed to duplicate the accounts of the majority—"I lost my small grain first and it was a total loss. I had a good garden and that was not touched that time, but the next time it came along, it got that. My timber is dying and all since 1906 when they began running the smoke out of their big stack."

One man alone took the position that the smoke and acid fumes were rather a benefit than otherwise. "Why," said he, "I was born and raised in this district, and knew the county as a boy. There is a strip of country between Blue Ridge and McCay's that was very poor and now it's had the acid fumes for a few years, it brings double what it did when I was a boy."

I suggested that good farming and the use of manure was responsible, but he would have none of it, assuring me that the land was never fertilized and the farming was of the most primitive type.

Assuming that his recollection and statement of the facts were accurate, it points to a phase of soil damage caused by the acid fumes that will cost the citizens of Georgia enormous sums of money to repair.

The soils in the district are the result of the decomposition of the rock of the district—slates, micas, saurolites, actinolites, and limestones—marbles with other minerals and

quartz belts, by a dozen or more influences were resolved to a "soil."

The raw soil had to be "broken in" to serve the purpose of plant growth. All are familiar with the raw soil that comes from the depths of a newly dug well. It is unfit for plant life. Gradually, the air and sun and a thousand contributing causes ripen it till the lower forms of vegetation take hold. When they do, the soil bacteria begin their work, which is a formation of plant food from the minerals in the soil. The particles of soil are broken as to their chemical composition and in place of the stable insoluble mineral, is a new compound with a feeble organic acid humic or ulmic which in turn, insoluble enough to resist leaching, is so weak as to be decomposed by the fluids secreted by the pores of the feeding roots of the plant. This enables the plant to assimilate such of its ingredients as are suitable to its wants. It is nature's provision for the gradual supply to vegetation of the all time supply locked up in the soil, which, if immediately available, would leach to the ocean and universal sterility would ensue.

The acid fumes killed the soil bacteria and unlocked the soluble with a larger temporary yield—living on capital rather than interest—so to say.

In that connection, I may say, when at Copperhill I met a Mr. Tyson of a well known Maryland family, who is making some experiments towards the rehabitation of the barren lands round Ducktown and Copperhill. He seemed pleased with his success, although the patches that he had cultivated was small, he had derived much information from these tentative experiments. The mode that had given the best results was by the use of lime to check and neutralize the acid in the ground and then the moderate use of mixed fertilizer.

He gave me an Irish potato raised within two miles of Ducktown and a more handsome potato I never saw. Its skin was speckless. All grub worms and insects that usually attack roots and tubors had evidently been unable to survive the acid in the soil. Also a small ear of corn. These will be handed in with this report.

I asked a number of farmers in North Georgia as to what a man could afford to do if the acid smoke was stopped to

bring his land up to normal conditions. Most of them did not know, scientific farming being outside of their hereditary knowledge, but one or two discussed the matter intelligently. The general concensus of opinion was that land that had been "smoke poisoned" could be brought back by liming at the rate of a ton per acre and by growing a crop of peas or clover and plowing under, whilst in bloom, a crop of corn might be raised next year with fertilizer in the hills.

That meant a ton of lime, freight, hauling, spreading, twice plowing and the loss of a year's farming before the land would raise corn. Most of them said it could be done for ten dollars per acre. In the face of an expenditure like that to make good an inroad against which the farmer has been powerless, I am compelled to report the damage actual, excessive and continuing.

From several points in the district I collected soil samples and made cultures so as to be able to count the baccilli in each soil. I may here add a word of explanation. The general public attitude towards bacteria is rather that of polite incredulity, although to those who have had occasion to study the subject their existence, some of their functions, in some of their habits of life are as much facts as the existence of men or trees. One gentleman phrased his doubt by saying: "If it takes the highest powers of a microscope to see these things at all, how can they be counted with any certainty?"

As the value of evidence depends on its probability I trust a short explanation of methods may not be deemed out of place.

These bacteria are very small. In one form that I have in mind thirty thousand of them end to end would only measure an inch, but they belong to the lower order of vegetation. They mature in less than an hour (in many cases) and reproduce by breaking in two and in from half an hour repeat the process. Each individual is the source of a colony. Now if ten grains of soil are powdered and stirred into a liquid which is fluid when warm but a stiff jelly when cold, the soil makes the liquid slightly turbid. When cold the stiff jelly has the isolated bacteria held in its moist clasp. If the vessel holding the jelly is put in an "incubator" which is a box wherein a constant temperature is maintained, in this case somewhat less than blood heat, and in the dark, the conditions resemble a

summer morning and the bacteria begin to grow, multiply and by repeating the process, the individual soon becomes a colony and is visible to sight of the naked eye. Therefore, by putting over the shallow glass dish in which the cultivation has taken place, a transparent substance, graduated into divisions of equal size, it is easy to see how many divisions the whole dish occupies, and by counting the colonies in each division the aggregate is obtained. The weight of the quantity of earth being known the calculation is simple. The preparation of the jelly and all operations connected with it have to be done under scrupulously sterilized conditions or strange baccilli would be introduced which would destroy the results.

I found in similar quantities of soil the following bacteria. I may add that the samples were taken from near the surface from road ditches and railway cuts, so that farm manure should not have influenced the results by the inclusion of new life forms not proper to the soil. For each gramme or 15⅓ grains for comparison.

Atlanta, from R. R. cut near Terminal, possibly fertilized in time	32,500
Merietta, from West Polk St. may have had garden soil mixed with it	36,000
Murphy, North Carolina	29,000
Blue Ridge, Ga.	22,300
Mineral Bluff, Ga.	27,250
Ducktown, Tenn.	280
Isabella, Tenn.	120
Copperhill, Tenn.	170
McCays, Tenn.	190

These were the results after 48 hours incubation. This shows, interpreting these figures, that the recuperative power of the soil, after deflection of its growth elements by vegetation is strong at Atlanta and Merietta, although the probabilities are in favor of the soil having been stimulated by fertilization in these two cases. At Mineral Bluff, Georgia, the soil was cultivated within a few years but shows ample bacteria, but inside the sterile areas of Ducktown, Isabella, Copper Hill and McCays, the recuperative power are almost nill. Were the acid fumes removed, at the cost of about ten dollars per acre, as

shown by Mr. Tyson's experiments, the land would be amenable to culture. This however, is impossible on the vast areas which hold Georgia's forest reserves.

In an exhaustive study of the subject, Prof. Persifor Frazer of Philadelphia, Pa., which was published by the American Institute of Mining Engineers in April, 1907, I find the following passage:

> "Where the external parts of plants are constantly exposed to the action of this poison (sulphur dioxide) through years, the percentage (of sulphates) in the leaves shows a slightly excelerated increase with their age. Younger plants, with more vitality, on the whole show fewer symptoms of disease and approaching death than older plants, because they are better able to survive the successive impairments of the leaf organs, and also to eliminate the active cause of destruction."

From this, as well as personal observation, I gather that our friends of the Tennessee Copper Company when they restricted their operations "in May, June and July making it up later" were dealing with impressions rather with a close knowledge of vegetable physiology.

I spoke to the officers of the Tennessee Copper Company as to the damage that was being caused by their acid smoke, and was met by the argument that they "spent $75,000.00 per month in pay roll and if they shut down the country would starve." As I had no authority to adjust the numerous equities involved in such a set off, I did not inquire as to whether the parties damaged received the whole or any part of the above sum.

I regret to have to report that I was not able to find a shred of evidence that the said Tennessee Copper Company has ever made any effort to abate the nuisance complained of, except the erection of a high stack, which not only failed its purpose but was the means of spreading the fumes to the destruction of large bodies of timber, hitherto beyond its range.

There is no reason "to shut them up." There is every reason to ask them to restrict their output of ore and smelting operations so as to be able to take care of all the sulphur dioxide generated, with the exception of such occasional leak-

ages as attend nearly all branches of manufacturing on a large scale. These, like the noise of machinery, smoke and various other intrusion on the quiet and rights of the public are tolerated within certain limits, for the good of the common family that civilization gathers together for mutual interests.

I have some photographs. They are self explanatory.

There is another feature of damage to the State of Georgia directly attributable to the sulphurous fumes emmitted by the copper operations of the Ducktown regions. I refer to the effect on the roads. As a matter of fact the roads of North Georgia have always been bad but up to the time when sulphurous emanation began they were always improvable and the improvements would stay until worn out by usual travel.

By the destruction of the soil bacteria the surface growth of vegetation is checked in the areas adjacent to the roads. There is no longer the plexus of rootlets to hold the soil and bind it to its place, so that, in the hard rains that occasionally fall, the surface, formerly held in its intergrity, now erodes into gulleys of first small size, but becoming larger, become brawling torrents which cut the roads and render travel unsafe. It is trite to say that the roads have to be repaired anyhow at intervals. The time, labor and expense annually put on the roads would confer more lasting benefits to the people of Georgia, were the natural conditions of climate and topography only to be dealt with.

I now pass to a consideration of the Ducktown Sulphur, Copper & Iron Company, Limited, and their works at Isabella, Tennessee.

This company is composed as follows, as given in Moddy's Annual, 1908:

DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED.

Incorporated February 16, 1891, under the laws of Great Britain. Property consists of the Mary, Calloway and other mines of Isabella, Polk County, Tennessee. Ores are suphides averaging under three per cent of copper worth gold and silver values. Main shaft is 600 feet deep. Equipment comprises

both steam and electric power. Smelter has a daily capacity of 500 tons of crude ore. In 1903 a change was made from heap roasting of the ore to pyritic smelting system, with the result in saving of about three cents per pound in refined copper productions. The mine has a producing capacity of over 6,000,000 pounds of refined copper per annum and is one of the principal producers in the appalachian field.

Capital Stock authorized 75,000 pounds. Issued 66,000 pounds. Par 1 Pound. Debentures 38,300 pounds first mortgage at 5% and 7,735 pounds second mortgage at 7%. Has paid dividends of 963 on ordinary capital stock and 19.114% on Founders shares.

Officers: Col. Jas. Le Guyt, Chairman; H. Godber, Sec.; Jos. Gordon, Gordon Mgr. and Director; Jas. Worley & Sons, Auditor; C. W. Renwick, Gen. Mgr.

Office 1, Gresham House, Old Broad St., London, E. C., and Isabella, Tennessee.

Note: 1 pound sterling equals approximately $5.00.

Let me now add the figures procured from Mr. Renwick.

Year	Ore Smelted
1901	110,627.
1902	127,615.5
1903	91,310.4
1904	138,524.5
1905	184,828.7
1906	189,506.
1907	182,857.8
1908	142,786.2
1909	140,508.5
1910 (first six months)	106,922.
Total	1,415,486.7 tons

The sulphuric acid shipments for October, 1910, were 4302 tons or equivalent to 52° B 5206.7 tons. These details have

been kindly furnished me by Mr. C. W. Renwick, resident General Manager.

They have two furnaces but only one was in operation when I went to Isabella. I went unannounced and from the top of the hill overlooking the plant. No acid smoke was seen coming from their stack and the outlets from their Gay-Lussac towers showed no undue leakage. In other words, as the smelting records show, they cut down their output to about what they could take care of in the way of sulphurous acid fumes or smoke. They have a well built acid plant working perfectly when I went over it, and taking care of the sulphur dioxide as formed. Half an hour after my arrival the automatic furnace charger broke down and there was considerable leakage of gas whilst charging by hand. A couple of hours later the repair was made and the emission ceased at once. The works are very competently managed as to the chemical and mechanical parts, and there really seemed to be a conscientious effort to comply with the obligations to abate the sulphur dioxide nuisance. It is however, fair to say that if the price of copper advanced, it would be a strong temptation to increase their smelting beyond their facilities for acid collection. They complain that they have further acid chambers partly constructed but their English directors did not wish to assume the expense of finishing them and so locking up a further sum of money with an injunction from the Supreme Court of the United States hanging over their heads. There may be an equity in this which counsel can deal with, now that I draw attention to it.

They sell their acid output to the International Agricultural Corporation and I fear with an intimation that a larger output of acid would not be welcome, so instead of sending their unsalable acid to the skies as their neighbors do, they restrict production.

I have no proof that this is the controlling reason for their moderation of production, but consider it worthy mention as having possible weight with them, because it suggest a danger.

If the market is blocked by this local trust for their acid, and the copper market took a rise it would oppose cupidity to conscience, and that is a difficult position. At the time of my visit they were not sending poisonous gases into the State of Georgia.

The chimneys are low and the basin in which their works are situated is three miles away from Georgia. It was rendered absolutely desolate by the roasting of ore years ago. It has not recovered to any appreciable extent. It is still a picture of desolation. This however, is in Tennessee and does not affect the State of Georgia.

EXHIBIT D.

State of Tennessee)
Hamilton County)

W. M. Bowron, being duly sworn, says that he is a chemist, chemical and construction engineer of long experience, that he began his studies at Edinburgh University and subsequently was assistant to Dr. George Lunge in the operation of sulphuric acid works. Said Lunge is the leading authority on the manufacture of sulphuric acid and is at present Professor of Applied Science in the University of Zurich, Switzerland.

Affiant has served as Technical adviser in matters involving a knowledge of chemistry to many corporate enterprises and was for a number of years Chemist to the Tennessee Coal, Iron & Railroad Company.

He is and has been, for a number of years, well acquainted with what is known as the Ducktown Basin in Polk County, Tennessee, and the territory lying immediately south, in the State of Georgia. He knows the location, method of operation and construction of the smelting and sulphuric acid plants of both the Tennessee Copper Company and Ducktown Sulphur, Copper & Iron Company, Limited.

He is the same W. M. Bowron who was commissioned by the Governor and Attorney General of the State of Georgia, on

October 28th, 1910, to visit said Ducktown Section and make report as to the operations of the two companies above. His respective commissions from said officials of Georgia being hereto attached.

Pursuant thereto and shortly thereafter, affiant visited the section in question, with which he was previously well acquainted, and made a truthful report embodying the results of his visit and his conclusions to the Governor of Georgia, copy of which is also attached hereto.

Affiant has subsequently visited said Ducktown Section repeatedly and has made practical tests and many observations under varying conditions, when both said companies were in operation, and also when only one was being operated, from all of which, together with an intimate study and knowledge of the topography, proximity, water courses, air courses, and height of stacks at which point sulphur dioxide is emitted from the respective smelters, he is positive that whatever damage results to the south of the Georgia line from smelting operations in Ducktown Basin is attributable entirely to operations of the Tennessee Copper Company and that any competent investigation will demonstrate this.

Affiant has no interest in and no connection with either of said companies.

WM. M. BOWRON.

Sworn to and subscribed before me on this the 17th day of February, 1914.

M. O. CATE, Notary Public.

EXHIBIT E.

Atlanta, Ga., Sept. 27, 1913.

The Ducktown Sulphur, Copper & Iron Company, Limited,
Isabella, Tennessee.

Gentlemen: On the 12th and 13th of this month we visited your plant at Isabella, Tennessee, where we were afforded by your capable and courteous management every facility for a thorough examination of the plant and its workings. We will not undertake to describe the plant in detail. Sufficient to say it consists mainly of a pyritic copper smelting plant, the fumes from which are passed into a large and well designed sulphuric

acid works, of over a million cubic feet capacity, equipped with Glover and Gay Lussac Towers, fan systems and all modern appliances for the conversion of the sulphurous gas produced in your smelter into merchantable Sulphuric Acid. The acid plant during our visit was in splendid condition, condensing into Sulphuric Acid virtually all of the Sulphur Dioxide Gas passing into the system.

The question before us being the quantity of Sulphurous Acid Gas or Sulphur Dioxide which escapes into the atmosphere without being condensed into Sulphuric Acid, becomes a simple matter of ascertaining from your records the quantity of sulphur charged in your ore in a given period, the quantity of sulphur contained in the finished acid produced and shipped, the quantity of sulphur remaining in an inert condition in the slag, matte, flue dust, etc., during the period referred to; then by making the proper credits and deductions we will ascertain the amount of Sulphur Dioxide Gas escaping into the atmosphere. We present the following figures as obtained from the records in your office:

The total amount of sulphur delivered daily to the furnaces, according to the figures given us is 140,346 lbs. Of this amount we can account for 108,356 lbs. leaving a balance of 32,090 lbs. not accounted for. Of the sulphur not accounted for above, 1,325 lbs. escapes from the chamber exit leaving 30,738 lbs. to escape from the furnaces per day. The following figures give our calculations: Average charge to furnaces for the months of June, July and August, 1913, covering a period of ninety-two days.

Mary Mine:

134,580.55 tons—375.87 tons daily, 16.87% S.—126,818 lbs.
92 days. Sulphur.

East Tennessee Mine:

3,380.75 tons—36,747 tons daily, 12.08% S.— 8,878 lbs.
92 days. Sulphur.

Isabella Mine:

716.7 tons— 7.79 tons daily, 29.85% S.— 4,650 lbs.
92 days. Sulphur.

Total amount of sulphur charged to furnaces daily, 140,346 lbs. Sulphur.

SULPHUR ACCOUNTED FOR.

Sulphuric acid produced, 284,680 lbs., 60°, Be'.—72,193 lbs. Sulphur.

Low slag, 840,000 lbs. containing 1,308% S.—10,997 lbs. Sulphur.

High slag, 168,160 lbs., containing 1.53% S.—2,572 lbs. Sulphur.

High Matte, 27,961 lbs. containing 22.57% S.—6,310 lbs. Sulphur.

Flue dust, 15% of 840,800 lbs. ore—126,120 lbs., dust containing 10.5% sulphur—13,330 lbs. Sulphur.

Mud daily 14,000 *lbs.*

H_2SO_4	31.65%—4,431 lbs.	32.65% S.—	1,446 lbs. Sulphur.
$ZnSO_4$	45.52%—6,372 lbs.	19.97% S.—	1,266 lbs. Sulphur.
$PbSO_4$	4.39%— 574 lbs.	10.56% S.—	60 lbs. Sulphur.
$CaSO_4$	1.02%— 143 lbs.	23.53% S.—	33 lbs. Sulphur.
$CuSO_4$	.63%— 88 lbs.	20.07% S.—	17 lbs. Sulphur.
$FeSO_4$	.54%— 75 lbs.	21.05% S.—	15 lbs. Sulphur.
A_1SO_4	.45%— 63 lbs.	28.00% S.—	17 lbs. Sulphur.

Total amount of sulphur accounted for, and not escaping in the atmosphere..... 108,256 lbs. Sulphur.

Resume

Total Sulphur Charged to Furnaces ..... 140,346 lbs.

Total Sulphur accounted for, not discharged to atmosphere.....	108,256 lbs.	
Chamber exit losses.....	1,352 lbs.	
Balance lost from furnaces.....	30,738 lbs.	
	140,346 lbs.	140,346 lbs.

Recovery, 54.128 tons— 77,135%

Loss from Chamber Exit ..... .676 tons
Loss from furnaces ..... 15.369 tons
} —22.865%

100.000%

In the above statement, we have given you credit for every item to which we felt you were entitled. Your management at

the works brought up the question of free sulphur in the ore and of sulphur volatilized in the furnaces, but not oxidized and also of sulphur in combination with zinc.

As we see it, we cannot give you any credit for this free sulphur or for any sulphur combined with zinc unless they be present in the flue dust and in the mud. Any free sulphur going to the chambers would be oxidized at once and converted into sulphur dioxide. Also any escaping from the furnaces would be oxidized and pass into the air. As to the zinc whilst there is much of this in the ore, it is deposited largely in the flues and what passes through the flues goes into the chambers where it is converted into zinc sulphate; this dissolves in the acid and is credited as sulphuric acid. We have given you full credit for the total sulphur contained in the flue dust and mud, where, in our opinion, any free sulphur or zinc combined with sulphur would be, and although this extra sulphur which you claim in an inert state would amount to several thousand pounds of sulphur dioxide daily, we do not see our way clear to allow this claim.

We have then a total of 32,090 lbs. of sulphur which is equivalent to 64,180 lbs. of sulphur dioxide gas, which is the average escape into the atmosphere for a period of one day during the 92 days comprising the months of June, July and August, 1913, that period of the year during which it is claimed the greatest damage to vegetation occurs. We will say that whilst in the immediate vicinity of the plant the presence of sulphur dioxide was quite noticeable, yet at a distance of approximately a quarter of a mile to the east of the plant in a house located on a hill, where we passed the night with the wind blowing from the plant directly in line with us we could not notice the presence of the gas when sitting on the porch or in our bed rooms with windows open all night. The vines growing on the porch of this house were green and flourishing, but we did notice that some of the leaves were scorched and partly shrivelled; whether this was the result of the action of the fumes or of insects and drought is doubtful.

Whilst the whole country in the immediate vicinity is desolate and denuded of vegetation a condition produced in past years by the practice of roasting ore in the open air, we

noted that wherever an effort has been made to plant grass or flowers in the yards of the residents in the immediate neighborhood, these efforts have been rewarded—with success. In a number of such places, we noted grass, flowers and vegetables growing luxuriantly almost within the shadow of the plant.

Your plant is located in a comparatively low spot, the tops of the furnaces from which most of the unused gas escapes being very much below the level of the surrounding hills. A bold stream or creek flows at the very base of the plant and doubtless a considerable quantity of escaping gas naturally follows the channel of this stream, and owing to the great affinity of sulphur dioxide (SO_2) for water is absorbed therein and carried away in the stream.

Owing also to the fact that the origin of the gas is down in this low basin, the law of diffusion has a better chance to operate between the point of origin of the gas and the Georgia line than if all the gas were emitted from a tall stack on top of a high elevation. The gas being emitted in a basin by virtue of its superior specific gravity (2.24 air being taken as one) tends to spread out over and flow down the valleys and creep up and over the sides of the hills, thus exposing a wide surface for the action of the winds which sweep down upon it and carry it upward, and thus diffuse it through the atmosphere, so that by the time this gas reaches the Georgia line its diffusion into the general atmosphere must be very thorough, that portion of course being left behind which has been absorbed by the stream and by the soil locally, and the percentage present in the air must be infinitessimal.

In order to show how very small it is let us assume that all of the escaping gas is driven from the plant in the direction of Georgia and is confined in an area represented by a geometrical figure having its apex at the plant, its base line say only five miles along the Georgia line, the distance from the apex to the base being approximately three and one-half miles and the height of the upper base line running parallel with the Georgia line being three hundred and twenty-five feet above the lower base line. By applying the rules of mensuration, we find that the cubic contents of this figure would be 52,852,800,000 cubic feet; that is to say, we should have that number of cubic

feet containing 32,090 lbs. of sulphur or 64,180 lbs. of sulphur dioxide gas. But that would be the amount which had accumulated there in 24 hours. In *one* hour 2,674,178 lbs. would accumulate. Now we learn from the statistics of the Weather Bureau that the lowest velocity of the wind on a calm, quiet hot day is 2½ miles per hour, therefore the air and gas in this imaginary geometrical figure would be removed 2.142 times per hour and we should have $\frac{52,852,800,000 \times 2.142}{2674.178} = 42,334.765$ cubic feet. That is to say we should have 42,334.8 cubic feet of air containing one pound of sulphur dioxide, or 6,047.8 cubic feet containing one grain of sulphur dioxide, but 6,047.8 cubic feet of air will weigh 3,414,599 grains so we should have at that point on the Georgia line a mixture of gases containing 1 part of sulphur dioxide to 3,414,599 parts of air, a greater dilution than is claimed to be injurious by 3.4 times.

But this calculation is based on the lowest velocity of the wind the AVERAGE velocity obtained at the Atlanta station is 11.4 miles per hour and by using this factor in our calculation we find the composition of the air on the Georgia line when the wind is blowing at its average rate per hour to be 1 part of sulphur dioxide to 15,570,571 parts of air, or a far greater dilution than has ever been claimed to be injurious.

As a matter of fact, the dilution would doubtless be even more than this since we have only assumed at the base of the figure a height of 325 feet or that of the stack of the Tennessee Copper Company with the height constantly diminishing as we approach your plant until it reaches zero at the apex, or the plant itself, whereas the condition for diffusion are perfect and the gases will doubtless have diffused and been carried up towards a much greater average height before reaching the Georgia line, and part of them necessarily absorbed by the streams and soils locally before reaching this point, furthermore if we follow the gases across the Georgia line, the apex of our original imaginary geometrical figure would now be represented by a straight line 5 miles long at its base and paralleled by a similar line 325 feet above it so that, from that point onward even for a very few hundred feet, the dilution would become so gigantic as to stagger the imagination and the striking of a

sulphur match in the open air would doubtless generate more sulphur dioxide in the immediate vicinity than could be found by the most delicate tests in an atmosphere so diluted.

SULPHUR DIOXIDE PRODUCED BY THE COMBUSTION OF COAL.

It is conservatively estimated by those who are in a position to know that the annual consumption of coal in Atlanta for all purposes is from 450,000 to 475,000 tons. This coal carries approximately an average of 2% sulphur. Let us take on a very low estimate 300,000 tons per annum for Atlanta's consumption, which would give us at 2% sulphur contents 6,000 tons of sulphur per annum, or 16,438 tons daily equivalent to 32,876 lbs. of sulphur or 65,752 lbs. of sulphur dioxide daily thrown into Atlanta's atmosphere from its numerous stacks and chimneys.

We have here a striking illustration of the law of diffusion of gases exerting its benign power and so effectively diffusing and diluting this noxious gas that its pungent odor is not even perceived in the atmosphere by the most delicate sense of smell. That it does no injury to vegetation under these conditions of extreme attenuation is well attested by the beautiful parks and trees and lawns, as well as by the flower and vegetable gardens of the city of Atlanta and its environments. It will be seen however that the total amount of sulphur dioxide generated in the heart of Atlanta exceeds somewhat, even with the very conservative estimate of 300,000 tons annual consumption, the total amount discharged into the atmosphere from your Ducktown plant at a distance of 3½ miles from the Georgia line.

Other manufacturing cities produced much greater quantities of sulphur dioxide than the city of Atlanta; thus it has been estimated by an eminent authority that in the city of Cleveland, Ohio, more than 80 tons daily of sulphur, or 160 tons of sulphur dioxide are discharged into the atmosphere, and yet that city is famous for its beautiful parks and gardens.

In concluding this report, we desire to express our conviction that you have solved satisfactorily a most difficult industrial problem. Handicapped by the at one time apparently insuperable obstacles of a gas coming from your smelting furnaces,

poor in sulphur dioxide and containing considerable percentages of carbon-dioxide, and carbon-monixide, also elements producing large quantities of a very fine impalpable dust, you have as pioneers in an untried field by the employment of brilliant engineering talent, and the unstinted expenditure of money overcome in the simplest and most practical manner possible these great difficulties and built a plant which is a model of its kind and which should be carefully studied by all others having similar obstacles to overcome.

Allow us to congratulate you on having successfully abated, so far as you are concerned, the nuisance which at one time existed, and also upon your notable contribution to the cause of science and civilization.

Respectfully submitted,

J. M. McCANDLESS, Consulting Chemist.

PETER S. GILCHRIST, Consulting Engineer.

EXHIBIT F.

State of North Carolina,
County of Mecklenburg.

Personally appeared before the undersigned authority, Peter S. Gilchrist, who made oath in due form of law, that he is a consulting and constructing chemical engineer, with headquarters at Charlotte, North Carolina, of long experience in the construction, manufacture, study and supervision of sulphuric acid plants, and whose special work for many years has required him to study the condensation of noxious fumes and the construction of acid chambers in this connection, and the reduction of fumes from copper smelting and other manufacturing plants yielding noxious fumes.

Affiant is familiar with the design and construction of the combined smelting plant and sulphuric acid plant of the Ducktown Sulphur, Copper & Iron Company, Limited, located in the Ducktown Basin, in Polk County, Tennessee. Likewise, with the plant and operations of the Tennessee Copper Company, located some two and one-half miles southwardly and that distance nearer the Georgia line than the plant of the Ducktown Sulphur, Copper & Iron Company.

Affiant, in connection with J. M. McCandless, a consulting chemist, formerly chemist to the State of Georgia, was requested

in September, 1913, to visit the section where said smelting plants operate, take observations and make report as to whether the operations of said Ducktown Sulphur, Copper & Iron Company, Limited, in any wise injuriously affected territory south of the Georgia line.

Affiant and said McCandless, both of whom were previously familiar with the plants, methods of operation, and territory, went again to the Ducktown section, reviewed and again studied the situation, and as the result of their knowledge and labors, prepared and signed a truthful report and conclusions, copy of which is appended below, and which affiant verily believes is true, in substance and in fact, and which can readily be verified by both practical and scientific investigation.

Affiant is fully convinced that any damage whatsoever which results from smelting operations as carried on in the Ducktown Basin, as respects Georgia territory, is attributable entirely to the Tennessee Copper Company and that any competent investigator, or board of inquiry studying the conditions and circumstances pertinent, will so report.

Said J. M. McCandless is a most capable chemist and a man of high standing throughout the State of Georgia and the South. Affiant is informed that he is at present, and for some months has been, traveling on the Pacific Slope for his health, and that for this reason, his affidavit to the said report may not be procured. PETER S. GILCHRIST,

Sworn to and subscribed before me on this the 10th day of February, 1914. DUNCAN P. TILLETT,

Notary Public, Mecklenburg County. North Carolina.

EXHIBIT G.

State of Tennessee,
Knox County.

S. M. Bain, being duly sworn, says: I am a botanist, at present Professor of Botany in the University of Tennessee, and Botanist of the Tennessee Agricultural Experiment Station, which post I have held, beginning as Assistant, for over twenty years. I am also a collaborator of the United States Department of Agriculture. In my work as Botanist of the Tennessee Experiment Station I have made fundamental contributions to the Science of Plant Physiology my most important work being

on the action of copper compounds on plants. This work is recognized as a standard authority in this country and Europe. I have for twenty years in my official duties been in constant touch with the plant diseases of this region, and have had frequently to diagnose such diseases, and to discriminate between them and insect injuries. My scientific work has been recognized by election to membership in a number of scientific societies, among them the following: Fellow American Association for the Advancement of Science; Member Royal Society of Arts, England; Associe libre de l'Academie internationale de Geographie Botanique; Member American Phytopathological Society, etc.

I have as an authority on Botany and Plant Pathology given popular lectures on these subjects before various educational institutions, among them two lectures at the University of Georgia, Summer School, in 1912, and before the Georgia Breeders' Association, at Athens, in 1913.

In addition to my general training and experience as a plant pathologist I have thus given special attention to the general subjects of toxicology as applied to plants, and of smelter fumes in particular. I have studied with care the more important German publications on the effect of smoke on plants, and am conversant with the general results of these fundamental investigations.

On September 13th, 1913, I began a careful investigation in the region about Ducktown, Tennessee, of the condition of timber and other vegetation, with the special object of determining whether there was at that time, or had been previously to that time, any damage to such vegetation by smelter fumes from the works of the Ducktown Sulphur, Copper & Iron Company. I have since said date spent in actual field investigation in the region aforesaid about twenty-four days, and considerable additional time in the laboratory study of various exhibits collected in said region. In my itinerary I covered much of the territory in Fannin, Murray and Gilmer Counties, Georgia, touching the Tennessee-Georgia State line at various points from the North Carolina boundary westward to the Alaculsy Valley, seventeen miles more or less, and dipping southward into Georgia several miles at various points. On said itinerary I very carefully and critically examined all vegetation that appeared in the least to arouse suspicion of smoke injury or other and natural diseased conditions. As to the then aspect

of vegetation, forest trees, and agricultural crops, I found no external evidence of a diseased condition other than such as may be found in any similar region, and due to natural causes, such as fungus diseases and insect pests, or to forest fires and unfavorable season. I found among other natural diseases that white pine trees are dying from some obscure disease presenting exactly the same symptoms as are shown by the same disease which I found in Sevier County, Tennessee, a few days later at a distance of nearly 100 miles north of the Ducktown region.

By far the most accurate method I could avail myself of in the solution of the points at issue was to take blocks out of trees suspected to have suffered from smelter fumes, and to determine the rate of growth as indicated by the annual rings. It is a well established fact that all our ordinary trees form a distinct layer or cylinder of wood each year, and that by careful counting the exact age of the tree can be determined. Not only this, but the relative thickness of the ring of wood formed in any definite growing season is determined by the favorable or unfavorable conditions surrounding that tree during that season. Any strikingly unfavorable condition, such as drouth, insect attack, forest fire, or poisonous fumes, must and does result for that season in the formation of a thin growth ring. This method for determining the existence of smoke injury in the vicinity of industrial establishments, has been in successful use in Germany for at least twenty years. By the use of an instrument known as the increment borer I was able to remove a small core from a number of trees in the region in question, and with the additional data furnished from chips cut out, and from freshly cut stumps I found this method revealed in an astonishing manner the smoke history of the Ducktown region.

Some individual trees of any particular species are able to withstand the action of smelter fumes for many years, and may not reveal in the external appearance of their foliage any indications of smoke injury, but their annual rings will often show retardation of growth, and hence injury where it had not been suspected.

This method of investigation gave results tallying exactly with the smoke history of the region as it was told to me by the

officials of the Ducktown Sulphur, Copper & Iron Company. Many trees were thus examined, and care taken in every instance to select trees most exposed to air currents leading from the works of the defendant company, and the following conclusions were drawn:

1st. By far the greater amount of damage from smelter fumes in said region began not prior to 1906, the reputed date of the erection of the high stack of the Tennessee Copper Company.

2nd. A number of trees show improved growth condition, especially during the years 1911 or 1912 and 1913, attributable to the operations of the acid plant of the Tennessee Copper Company.

3rd. An occasional tree shows growth checks from 1901, the reputed date of the establishment of the plant of the Tennessee Copper Company.

4th. An occasional tree shows a growth check from 1894 to 1898, improved growth from 1899 to 1900, with still greater checks from 1901. This is accounted for by the reputed operation of the Pittsburg Copper Company from 1894 to 1898, to the cessation of fumes in the region from 1899 to 1900, and to the reappearance of these fumes on the reputed establishment of the Tennessee Copper Company's plant in 1901.

5th. I found out of over two hundred trees examined in this region only one whose growth checks could possibly be interpreted as indicating any injury by fumes generated by the Ducktown Sulphur, Copper & Iron Company between 1891 and 1900. This single case was doubtful, and its slight growth check may have been due to some other cause.

6th. These facts attested by the trees themselves appear to me to show that the lifting of fumes by the high stack of the Tennessee Copper Company, said to have occurred in the Spring of 1906 is responsible for by far the greater amount of damage to vegetation in that portion of the State of Georgia adjacent to the Ducktown Copper Region. This effect of high stacks in extending the zone of injury by smelters is recognized by the highest German authorities.

The Tennessee Copper Company has much the larger plant and is located within about a quarter of a mile of the Georgia State line with no hills intervening, while the plant of the

Ducktown Sulphur, Copper & Iron Company is full three miles north of said State line and releases its fumes from a low stack within a valley separated from the Georgia line by a range of hills extending above the top of its stack.

While I have been able after the aforementioned careful examination to find no evidence of injury to vegetation within the State of Georgia from fumes produced by the Ducktown Sulphur, Copper & Iron Company during the period when it operated alone, even granting the possibility of slight damage during that period immediately adjacent to the Tennessee line, within Georgia it amounts to a practical certainty that at the present time said Ducktown Sulphur, Copper & Iron Company is not responsibile for any damage to vegetation in the aforesaid region because of the operation of its acid plant, now said to be greatly reducing its output of sulphur fumes.

S. M. BAIN.

Sworn to and subscribed before me this 20th day of February, 1914.

WM. H. EAGLE,
Notary Public.

EXHIBIT H.

State of Tennessee,
Knox County.

C. W. Renwick, affiant, makes oath:

That he became general manager of the Ducktown Sulphur, Copper & Iron Company, Limited, in 1910, and so continues to the present. He became actively connected with said company in 1899, and has continued with it since.

That he is intimately acquainted with its smelting operations in detail, ore smelted, output and sulphur content of the ores; that the tonnage smelted during the years 1906-7 was as great, if not greater, than during subsequent years, and up to the present. That the sulphur content of the ores has gradually reduced, and at present the sulphur content of the ores smelted is about 75% of what it was in 1906-7.

That the smelter plant is located now as it was in 1906-7, about the same height of stack and the method of smelting is the same.

About June, 1909, the said company had completed and put into successful operation a sulphuric acid plant for the recovery and conversion of the sulphur content yielded by the

ores smelted. The same has been continuously operated since and emits from the stack approximately 15% of the sulphur. The details thereof are shown in the report of Peter S. Gilchrist and D. J. McCandless, filed as an exhibit herewith. The said acid plant cost several hundred thousand dollars and is of the most approved and modern design.

Affiant is acquainted with the smoke zone or radius effected by the smelting operations of said company prior to the beginning of operations by the Tennessee Copper Company in 1901. Said smoke zone at that time was confined to the Ducktown basin, and did not noticeably extend into the State of Georgia. The company of which affiant is manager began operations with its present plant in 1891, and has continuously operated to the present in substantially the same manner—except that about 1902 it changed from open heap roasting of the ore to pyritic or green smelting. During all this time the said Ducktown Company has made only a matte of approximately 50% copper, and said matte contains about 24% copper. Since the Tennessee Copper Company operations began it has refined its product, yielding a copper pig in excess of 99%, and the sulphur content in its ore has been correspondingly eliminated.

Said Tennessee Copper Company in the spring of 1906 put into practical operation a stack 325 feet tall and has continued the same to the present, the sulphur fumes being expelled therefrom. The difference in altitude at point of emission is about 195 feet, the top of the stack of the Ducktown Company being that distance lower than the top of the stack of the Tennessee Copper Company.

Shortly after the passage of the Legislative Resolution by the State of Georgia in 1913, affiant, on behalf of said company and through its general counsel, in an effort to prevent litigation and further an amicable inquiry, proposed to the Governor and Attorney General of Georgia that a body of scientists or a commission from one or more universities of the country be engaged to investigate and report as to whether or not the operations of the Ducktown Company were doing substantial injury within the State of Georgia—and that the Ducktown Company would bear the expense of this investi-

gation, if the Georgia officials would agree to accept and abide result of such investigation. The Georgia officials felt the resolution aforesaid was mandatory, and therefore they could not agree, assent to or participate in the investigation proposed.

All friendly overtures of this nature being declined, affiant then engaged D. J. McCandless, formerly State Chemist of Georgia, a man of attainment and high standing throughout the southern country, in company with Peter S. Gilchrist, to investigate and report on existing conditions, and has examined their report herein exhibited and believes the same substantially correct. Said McCandless is now traveling in a distant State, and hence cannot be procured at this time to verify said report.

From affiant's long and practical experience and intimate knowledge of local conditions at said plant, he is convinced no injury is done thereby to any territory south of the Georgia line.

C. W. RENWICK,

Sworn to and subscribed before me on this the 20th day of February, 1914.

J. PIKE POWERS, JR.,
Notary Public.

EXHIBIT I.

State of Tennessee,
Knox County.

W. B. Miller, being sworn, says he is and for a number of years has been engaged in the practice of law at Chattanooga, Tennessee, and for some four years has been general counsel for the Ducktown Sulphur, Copper & Iron Company, Limited, operating a combined copper smelting and sulphuric acid plant at Isabella, Tennessee, in the Ducktown Basin, in Polk County.

Affiant has had frequent occasion to appear on behalf of said company in the defense of actions brought against it claiming damages to timber and crops, covering periods both prior and subsequent to the installation of its acid plant.

During the December term, 1913, of the United States District Court at Chattanooga, Tennessee, before Honorable Edward T. Sanford, Judge, and a jury, we tried two of said suits, wherein J. P. Vestal and J. H. Vestal were plaintiffs, said

cases being numbers 1099 and 1098 respectively, and wherein said plaintiffs claimed damages aggregating $37,500.00. Said causes were, by consent of counsel, consolidated and tried together. The plaintiffs, owners of lands lying along the line between the states of Tennessee and Georgia, maintained that timber growing on said lands had been substantially damaged as result of operations by said company during a period dating from February 4th, 1908, to the 20th of May, 1910. It was agreed by counsel on said trials that the acid plant of said company went into practical operation in June, 1909. Consequently, the period under investigation covered operations both prior and subsequent to the installation of said plant. Plaintiffs' counsel during the trials aforesaid were most capable, of splendid attainment and high repute. The jury was composed of substantial men, chiefly of the agricultural class.

A verdict was returned in favor of defendant company in both cases, and copies of the verdict and judgment of the Court are hereto attached.

There was no appeal from the jury's finding, and the judgment is final.

Affiant has read the affidavit of C. W. Renwick setting forth friendly efforts to have the State of Georgia submit to a competent and scientific investigation touching the operations of above company and of the Tennessee Copper Co. with a view of either fixing liability or confirming non-liability as against the Ducktown Sulphur, Copper & Iron Company, Limited; and of his own knowledge states that such overtures as detailed in the affidavit of said C. W. Renwick are truthfully stated, as personally known to affiant who participated in the making of such friendly overtures.

W. B. MILLER.

Sworn to and subscribed before me on this the 20th day of February, 1914.

J. PIKE POWERS, JR.,
Notary Public.

EXHIBIT J.

Be it remembered that at a District Court of the United States begun and held for the Southern Division of the Eastern

District of Tennessee, at the Court Rooms in the city of Chattanooga, within said District and the Sixth Circuit, on the second Monday, it being the tenth day of November, A. D. 1913;

Present and presiding the Honorable Edward T. Sanford, Judge of the United States District Court for the Eastern and Middle Districts of Tennessee.

Among the proceedings had were the following, to-wit:

Friday, December 12, 1913; court met pursuant to adjournment, present and presiding the Honorable Edward T. Sanford, Judge, Etc.

J. H. Vestal
v.
Ducktown Sulphur, Copper & Iron Co., Ltd.
No. 1098
At Law.

Consolidated Causes.

and

J. P. Vestal
v.
Ducktown Sulphur, Copper & Iron Co., Ltd.
No. 1099.
At Law.

Came the parties by their attorneys and came also the same jury as upon yesterday, who having considered of their verdict, upon their oaths do say they find the issues joined in favor of the defendant and against the plaintiffs.

Friday, February 6, 1914; Court met pursuant to adjournment, presiding at Chambers, The Honorable Edward T. Sanford, Judge, Etc.

J. H. Vestal
v.
Ducktown Sulphur, Copper & Iron Co., Ltd.
No. 1098

and

Consolidated Causes.

J. P. Vestal
v.
Ducktown Sulphur, Copper
& Iron Co., Ltd.

No. 1099.

In these cases, upon the verdict heretofore rendered, it is considered by the Court that the above defendant have and recover of the plaintiffs and their sureties on cost bonds all costs hereof. Execution will run against J. H. Vestal and his sureties on his prosecution bond for only such portion of the costs of this consolidated litigation as accrued at his instance, and for the remainder of the costs execution will run against J. P. Vestal and his sureties.

It is further considered that plaintiff's suits be dismissed and that the defendant go hence.

Feb. 5, 1914. Approved for entry.

SANFORD, Judge.

O. K. W. B. MILLER, for Deft.
J. B. SIZER, for Pltff.

I, Horace Van Deventer, Clerk of the United States District Court for the Southern Division of the Eastern District of Tennessee, do hereby certify that the foregoing two pages are full, true and correct copies of the final verdict of the jury and the judgment thereon in the cases of J. H. Vestal v. Ducktown Sulphur, Copper & Iron Co., Ltd., and J. P. Vestal v. Ducktown Sulphur, Copper & Iron Co., Ltd., consolidated causes, as the same appear on file and of record at office in Chattanooga.

Witness my hand and the seal of said court at Chattanooga, in said District, this February 17, 1914.

HORACE VAN DEVENTER, Clerk.
By NEWTON AIKEN, Deputy Clerk.

In the Supreme Court of the United States

OCTOBER TERM, 1914.

STATE OF GEORGIA

vs.

TENNESSEE COPPER COMPANY
and
DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED.

APPLICATION OF THE DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED, TO BE PERMITTED TO TAKE PROOF IN REBUTTAL.

To the Honorable The Supreme Court of the United States:

The Ducktown Sulphur, Copper & Iron Company, Limited, respectfully shows to the Court:

1st. The original bill in this cause was filed by the State of Georgia against the Tennessee Copper Company and the Ducktown Sulphur, Copper and Iron Company, Limited, alleging in substance that by emitting noxious vapors from their furnaces, which are located in the State of Tennessee but near the Georgia line, they were causing great damage to the forests, crops and other vegetation

in the State of Georgia, and were polluting the atmosphere, injuring the public roads, etc., in said state, and it was sought therein to obtain an injunction to restrain said Companies from further permitting noxious vapors to escape and pass into the State of Georgia.

The case was heard on affidavits on February 25th and 26th, 1907, and an opinion was handed down on May 13th, 1907, wherein the Court found, in effect, that the defendants were committing a public nuisance in the State of Georgia by emitting from their furnaces used in smelting ores noxious fumes and gases; but the entrance of the final decree was postponed to the October Term, 1907. However, at said term the time to present the form for the final decree was enlarged as counsel might be advised without prejudice, and on due notice.

2nd. At the October Term, 1913, the State of Georgia presented to the Court a motion to enter a final decree against the Ducktown Sulphur, Copper & Iron Company, Limited, on the opinion handed down on May 13th, 1907. After argument said motion was taken under advisement, and on April 13th, 1914, the Court made an order:

(1) Postponing the consideration of said motion until the next term;

(2) Granting leave to said defendant to take additional testimony, to be taken before any officer in the State of Georgia or Tennessee authorized to take depositions by the laws of said States, upon ten days notice to counsel for the complainant, said additional testimony so to be taken to relate solely to the changed condition, if any, which may have arisen since the case was decided, said testimony to be concluded on or before the first day of July, 1914; and

(3) Granting leave to the complainant to take addi-

tional testimony in the same manner, such testimony to be concluded on or before the 1st day of September, 1914; all the testimony taken by both parties to be filed with the Clerk of the Court on or before September 15th, 1914.

3rd. Under the leave thus given, on June 18th to 23rd, 1914, the said defendant took the depositions of witnesses who testified in substance that after the decision of the case on May 13th, 1907, it had expended about $600,000.00 in constructing a plant for the purpose of manufacturing sulphuric acid from the fumes theretofore escaping from its furnace, and thus preventing the escape of noxious vapors therefrom; that said factory was completed in the year 1909, and has been from said date in successful operation; that the percentage and amount of said fumes which it has not been able to prevent escaping is so small that no damage can result therefrom in the State of Georgia; that the plant of the Tennessee Copper Company is very much larger than that of the Ducktown Sulphur, Copper & Iron Company, Limited, and is situated from three to three and one-half miles nearer to the State of Georgia; but that said Tennessee Copper Company also in 1909 constructed an acid plant and has since said date made one or more extensions of its capacity. Defendant also introduced witnesses from different localities in the State of Georgia who testified that during the last few years, especially during the years 1911, 1912, 1913 and 1914 up to the time said depositions were taken, conditions had been very much improved in their respective localities of said State; that smoke fumes had been carried into said sections but few times during said period, and the damages resulting therefrom, if any, were insignificant. Evidence was also introduced as to other matters, which are here unimportant.

4th. Thereafter, from August 12th to 21st, inclusive, the complainant took the depositions of a large number of witnesses who resided in and professed to be familiar with different localities in the State of Georgia, and who specified particular districts wherein they stated smoke containing poisonous sulphur fumes had often come during the years 1911, 1912, 1913 and 1914, by which the forests, orchards and crops in designated sections, and upon designated farms, had been greatly damaged, the principal localities mentioned being Epworth, Jack River section, Ellijay, Ellijay Valley, Carter Cay Valley, Turniptown Mountain, Bushy Head Mountain and surrounding vicinity, the Dora section, Start Creek country, and Morganton and Mineral Bluff vicinities. Some witnesses especially testified to the presence of smoke at Epworth and other sections in Georgia on and about the 12th of May, 1913, and from the 1st to 5th of July, 1914. The reason said dates are especially important is that from about the 4th to the 16th of May, 1913, and from about the 1st to the 6th of July, 1914, the Ducktown Sulphur Copper & Iron Company was operating its furnace, while the furnace of the Tennessee Company was closed for repairs, and the effort was thus made to prove that this defendant was permitting fumes to escape into the State of Georgia which caused said damage.

5th. Because the order entered by the Supreme Court gave no opportunity for introducing proof in rebuttal, this defendant endeavored as best it could to anticipate what complainant might attempt to prove, and hence, as above stated, introduced witnesses to show the condition of the forests, crops, etc., in the Northern part of the State of Georgia during the last few years; but it was impossible for it to anticipate and disprove in advance

the correctness of much of the testimony introduced by complainant. It is claimed, and proof was introduced by complainant tending to show, that damages have accrued in extensive localities in three or four counties of North Georgia. In but very few of said sections did defendant understand after diligent inquiry such claim would be made, and it would have been very expensive and have made a record of enormous proportions to have attempted to anticipate such evidence as to every locality in North Georgia. Furthermore, as to a very material portion of said evidence, it was impossible for defendant to anticipate, because it related to what it was claimed had occurred on dates subsequent to July 1st, 1914, the date upon which the defendant had closed the taking of its proof. For illustration, two experts made a trip through parts of Georgia during the month of August, and but a few days before their depositions were taken, and testified to what they had observed, claiming that the indications were that some of the damages resulting from sulphur fumes were of recent occurrence; and while the taking of testimony was still in progress, they in company with others made another trip through other sections, and were recalled and testified to damages in those sections, much of which they claimed was fresh.

6th. As soon as the taking of proof by complainant had been closed this defendant at once began an investigation for the purpose of ascertaining the true facts as to these several localities, and as to the emission of smoke which passed into the State of Georgia during the periods from May 4th to 16th, 1913, and July 1st to 5th, 1914, and it will be able to prove by the witnesses hereinafter mentioned that in many of the localities mentioned during the years 1911, 1912, 1913 and 1914 there has been prac-

tically no damages arising from smoke fumes to forests, orchards and crops, etc.; that in the other localities the damages resulting from smoke fumes have been very slight, not at all comparable with what they were previous to the construction of the acid plants by both of defendants; that some or all of the orchards which it is claimed in the complainant's evivdence were damaged by smoke fumes have the San Jose Scale, from which and possibly from other diseases the damage proven has arisen, and that from May 4th to 16th, 1913, and from July 1st to 5th, 1914, if any smoke fumes passed into the State of Georgia the quantity was so slight that no damage could have resulted therefrom, and that in fact the vegetation of the sections wherein it is claimed that smoke appeared during said dates was not damaged. It has also had a photographer to take and has had developed a large number of color photographs of the localities which were specially mentioned in complainant's testimony, which photographs show the exact conditions of said places within a very few weeks after it was claimed by witnesses that the forests, crops and orchards therein were greatly damaged, and refute said claims.

Defendant has exercised great diligence in procuring these facts, employing a number of men to make the investigation, and now presents the matter to Your Honor at the first opportunity.

The witnesses by whom this defendant can prove the facts above stated, and the particular localities or matters about which they will testify, are as follows:

J. R. Herren, Ham Holt, Z. V. Kimsey, H. H. Chastain, W. P. Harper, T. N. Bennett, John Boatner, A. H. Pack, I. S. Davis, W. W. Thrasher, M. C. Goss, who will

testify with reference to the vicinity of Epworth and Jack River section;

Linnie Clayton, Jason Akins, A. M. Johnson, M. S. Clayton, J. W. Clayton, B. H. Holt, W. T. Higdon who will testify with reference to the vicinity of Ellijay, Ellijay Valley, Carter Cay Valley, Turniptown Mountain, Bushy Head Mountain and surrounding country;

W. E. Rodgers, J. M. Davis, D. Q. Davis, W. D. Smith who will testify with reference to the vicinity along Toccoa River and Chastain farm, four miles Northeast of Blue Ridge, and especially with reference to the smoke in that vicinity on and about July 3rd, 1914, and other dates as claimed by witnesses for complainant;

Grant Orten, F. E. Garron, John Wilson, Robert Hampton, F. P. Largent, E. L. Stanley, who will testify with reference to Dora section east of Mineral Bluff, and also Start Creek country, and Morganton and Mineral Bluff sections;

The Entomologist of Tennessee, J. W. Clayton and Professor S. M. Bain, who will testify with reference to the diseased conditions of the orchards mentioned by complainant's witnesses and J. H. Quintrell, B. H. Holt and Sherman Reese, who will testify as to where specimen branches of fruit trees were obtained, which were examined by said entomologist and Prof. Bain;

Professor S. M. Bain, James E. Thompson, Sherman M. Reese, who will testify with reference to the taking and development of the photographs, and the localities where taken;

W. F. Lamoreaux, who will testify with reference to the operation of the furnace during May, 1913, and July, 1914.

The witnesses introduced by defendant as aforesaid, testified as to conditions in localities along and near to the State line at points which defendant then believed, and now considers most favorable for showing what damage, if any, had in fact resulted from its operations.

But complainant's witnesses, as above shown, testified to damage which they claim had resulted from smoke in localities many of which are much more remote and secluded than those covered by defendant's evidence.

It will require not more than two or three days to examine said witnesses, or such number thereof as defendant may deem sufficient to rebut the testimony aforesaid offered by complainant, and the evidence will be taken within such time as will suit the convenience of complainant and as may be directed by the Court, so that the final disposition of the case may not be delayed.

The defendant Ducktown Sulphur, Copper & Iron Company, Limited, therefore prays that it be permitted to take the depositions of the parties above mentioned with reference to the matters above set forth.

DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED,
By C. W. RENWICK.
General Manager.

W. B. MILLER,
J. A. FOWLER,
Sol's for D. S. C. & I. Co., Ltd.

STATE OF TENNESSEE }
KNOX COUNTY } ss.

Personally appeared before me, ROBERT D. TAYLOR, a Notary Public for Knox County, Tennessee, Sherman M. Reese, who makes oath that he is the agent of the Ducktown Sulphur, Copper & Iron Company, Limited, who has had specially in charge the procuring of testimony on behalf of said company in the case of State of Georgia vs. Tennessee Copper Company and Ducktown Sulphur, Copper & Iron Company, Limited, No. 1, Original, in the Supreme Court of the United States, and was present when all the evidence was taken on behalf of both complainant and said defendant, Ducktown Company, and further has supervised the investigation of the facts looking to the taking of the evidence in rebuttal, and that the statements made in the foregoing application are true.

SHERMAN M. REESE.

Sworn to and subscribed before me, this 3rd day of October, 1914.

ROBERT D. TAYLOR,
Notary Public.

[SEAL]

In the Supreme Court of the United States

NUMBER 1—ORIGINAL

OCTOBER TERM. NINETEEN HUNDRED AND FOURTEEN

STATE OF GEORGIA, COMPLAINANT,

VS.

TENNESSEE COPPER COMPANY, AND DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED,
DEFENDANTS.

Objections of the Complainant to the granting of the application of the Defendant, the Ducktown Sulphur, Copper and Iron Company, Limited, to be permitted to take additional proof.

TO THE HONORABLE, THE SUPREME COURT OF THE UNITED STATES:

Comes now the complainant, the State of Georgia, and by leave of the Court first had and obtained, files these its objections to the grant of the application of the Ducktown Sulphur, Copper & Iron Company, Limited, to be permitted to take additional testimony.

Paragraph three (3) of said petition shows that the defendant went fully into all the facts to show that the defendant was not emitting injurious fumes; covered all the years 1911, 1912, 1913 and 1914, and attempted to show that this defendant had done no damage in those

years; and that on account of the construction of their acid plant, "that the percentage and amount of said fumes which it has not been able to prevent escaping is so small that no damage can result therefrom in the State of Georgia."

If they have not successfully proved the foregoing assertion it is their fault, if the statement be true. If the complainant has shown it not to be true, the defendant could not be taken by surprise, as it has, as it charges in its petition, attempted to prove the proposition.

The defendant admits in this paragraph that it introduced witnesses from different localities in the State of Georgia to prove there was no damage, in the last few years, "especially during the years 1911, 1912, 1913, and 1914, up to the taking of its depositions," the last of June.

Any further evidence then could only be cumulative. They had notice and knew the State would introduce evidence to show there was smoke injury in various localities mentioned in the petition and it introduced about one thousand pages of evidence to try and disprove this particular fact, and sent their witnesses to every locality referred to in its petition, with the possible exception of one, and its witnesses testified to the condition there and the same is now in evidence; besides many of the witnesses they now offer to introduce in rebuttal are the same witnesses who have already been on the stand and could and should have given what they knew when so introduced.

Testimony as to conditions in nearly all the localities mentioned in paragraph four (4) of defendant's petition has already been taken by this defendant and is now on file with the court.

If defendant did not visit any of these Sections before complainant took its evidence, it also is to blame, as it

ought to have anticipated any such evidence, and by due diligence could have met it in advance.

Any way, it is only a question of veracity between the witnesses. Defendant especially covered the Jack River, Epworth and Mineral Bluff sections in its evidence, and is now complaining. In fact they sent one of their "commissions" as far as Ellijay, Georgia, and they testified as to conditions in the Ellijay sections, and this and the Ellijay Valley section they now complain that they had no knowledge of in advance of the State's evidence.

These "commissions" or parties consisted of eight or ten men who went into the localities named, and as far south as Ellijay, and all or part of said witnesses have already testified for the defendant in this hearing and their evidence is before the Court.

The defendant had witnesses who testified they went specially through those sections to look at the conditions and testified as to what they were.

Defendant complains in paragraph four (4) that it could not anticipate the proof that complainant made as to conditions that prevailed from May 4th to May 16th, 1913, and from July 1st to 6th, 1914, during which time the Tennessee Copper Company was closed down and defendant company in operation.

No one could know so well as the defendant that these dates were important in this case. The truth is it sought to conceal the fact from the complainant that it was running at a time when the Tennessee Copper Company was closed down.

Paragraph five (5) of defendant's petition charges that complainant introduced evidence to show smoke injury to three or four counties of North Georgia. This is an erroneous statement. Complainant's evidence related to conditions in Fannin and Gilmer counties alone,

and the greater part to conditions in Fannin County, Georgia, immediately south of the defendant's plant.

As to defendant's charge "that it would have been very expensive for the defendant to have anticipated the complainant's evidence as to the different facilities." The defendant took two hundred (200) to two hundred fifty (250) more pages of evidence than the plaintiff and if most of said evidence is irrelevant it is the fault of this defendant alone.

The two experts referred to in this paragraph were Dr. W. T. Hedgcock and E. B. Clark, who are United States government officials and disinterested witnesses and most of their evidence was in rebuttal of expert evidence introduced by this defendant. These experts introduced by the complainant went out and observed the conditions that prevailed just as the defendant's experts did and the complainant's expert's evidence was directed mainly in rebuttal of defendant's expert's evidence as above shown.

Paragraph six (6) of defendant's petition shows the same thing as paragraph four (4) thereof, that the defendant company knew the dates therein referred to, that is, from May 4th to 16th, 1913, and July 1st to 6th, 1914, were dates that were of vital interest in this case as defendant's plant was in operation and Tennessee Copper Company was closed down.

While it is not charged in so many words, it is intimated all through the defendant's evidence that whatever injury is done on account of the Tennessee Copper Company's plant, is not chargeable to defendant; and the evidence on this point was directly in rebuttal of defendant's witnesses.

If that is true, it ought to have shown that while the Tennessee Copper Company was closed down there was

no sulphur smoke and this the defendants would have proved if it had not have avoided that question studiously. In the same paragraph defendant complains that such of the damage complained of to orchards in Georgia is from the San Jose Scale, and this they could not anticipate. Complainant denies all this. The facts are the defendant in its evidence attempted to prove that all the injury complained of in North Georgia was on account of insects and like causes, and not from smoke injury. The opening of the case for further evidence on this line could only be on matters already gone over, and as above shown, the defendant has taken much more evidence than the State of Georgia. The State agrees that most of the defendant's evidence is irrelevant, but defendant is chargeable therewith.

There is nothing whatever in the proposition that the taking of testimony should be reopened because of the defendant's having taken color photographs since the State closed its evidence. All the proof shows that there are trees and spots in badly affected regions that do not show smoke injury; and besides, the defendant has already filed a great number of color photographs of various points in the territory which were taken by the same witnesses they ask the court now to let them interrogate further.

Finally, the defendant should not be allowed to take further evidence for the reason that the State had no notice at the time of closing its evidence that any such request as this would be made. To grant their application would entail great and unnecessary expense on the State. The State had employed special counsel to take the original evidence in the case, and counsel's employment has terminated. For these reasons if the defendant had contemplated taking additional evidence it should

have so informed the plaintiff at the time. Weeks have elapsed since the evidence was closed. The record has been filed and is now ready for the printer. It would put the State, the complainant, at a great disadvantage to allow the defendant at this late day to re-open the case and put up a number of witnesses who have already been on the stand, many of them, and the State given no opportunity to rebut them; and if the State were given such an opportunity the defendant could in turn again ask permission to take evidence and this would be interminable.

Further, if the defendant cannot show the changed condition in North Georgia, under the order of this Honorable Court in one thousand (1,000) pages of evidence it could not do so if allowed to retake evidence and no doubt add another thousand (1,000) pages of evidence.

The State is content to rest with two hundred fifty (250) pages less evidence than that which the defendant has already taken.

There ought to be an end somewhere to the taking of evidence, and the court considered and determined this matter in its opinion handed down on April 13th, 1914, giving this defendant until July 1st thereafter to take and conclude its testimony; and the prayer of the defendant to be allowed to take additional evidence, at this late day, which evidence is in the main merely cumulative, ought not to be granted.

All of which is respectfully submitted:

THE STATE OF GEORGIA,

By Warren Grice,
Its Attorney-General.

STATE OF GEORGIA,
COUNTY OF FULTON.

Personally appeared before me, W. E. Talley, Deputy Clerk of the Supreme Court of said State, an officer authorized by law to administer oaths, J. A. Drake, who makes oath and says that he is the special counsel for the State of Georgia who has had specially in charge the procuring of testimony on behalf of the complainant in the case of the State of Georgia v. Ducktown Sulphur, Copper and Iron Company, Limited, No. 1, Original in the Supreme Court of the United States, and was present when all the evidence was taken on behalf of both complainant and the defendant and participated in the examination of witnesses, has familiarized himself with the contents of the application of the defendant company in its effort to be permitted by the court to take certain additional testimony and has assisted in the preparation of the foregoing objection to the granting of the prayer of the defendant and that the statements made in the foregoing objections are true.

J. A. DRAKE.

Sworn to and subscribed before me this the 6th day of October, 1914.

W. E. TALLEY,
Deputy Clerk Supreme Court of Georgia.

Office Supreme Court, U. S.
FILED
FEB 24 1915
JAMES D. MAHER
CLERK

IN THE

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1914.

No. 1, Original.

STATE OF GEORGIA, COMPLAINANT,

vs.

TENNESSEE COPPER COMPANY AND DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED, DEFENDANTS.

MOTION TO ASSIGN FOR HEARING.

To the Honorable the Supreme Court of the United States:

Comes now the complainant, the State of Georgia, and by leave of the court first had and obtained presents this its motion in the above-entitled cause and respectfully represents:

That heretofore, upon consideration of this cause, this court held that complainant was entitled to an injunctive decree, the entering of which was postponed; that subsequently complainant filed its motion to have entered said de-

cree as against the defendant the Ducktown Sulphur, Copper and Iron Company, Limited, and submitted to the court a form thereof; that in opposition to said motion of complainant the defendant last named moved the court to be allowed to submit testimony showing that since the decision was rendered the said company had removed the conditions which the court had held made proper the granting of the decree; that upon consideration of this motion last referred to this court declined at that time to enter the decree, and by an appropriate order permitted said defendant to take testimony on the issue whether said conditions had materially changed since the date it had been determined by this court that complainant was entitled to said decree, the court by its order likewise permitting complainant to take and submit rebuttal proof; that subsequently the court on the motion of said defendant allowed it to take additional proof, all of which has been done.

Complainant now moves the court to assign for argument and consideration its aforesaid motion to enter an injunctive decree against the Ducktown, Sulphur, Copper and Iron Company, Limited, defendant.

Due notice to counsel for defendants of complainant's purpose to present this motion has been given.

It is believed that if the court should assign this matter for Monday, April 5, next, this date would be agreeable to all counsel concerned.

Respectfully submitted,

THE STATE OF GEORGIA,
By WARREN GRICE,
Its Attorney General.

No. 1, Original.

IN THE SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1904.

THE STATE OF GEORGIA, Complainant,

vs.

THE TENNESSEE COPPER COMPANY AND THE ANCTOSOTA SULPHUR, COPPER AND IRON COMPANY (Limited), Defendants.

IN EQUITY.

BRIEF AND ARGUMENT FOR COMPLAINANT UPON ITS MOTION TO ENTER INJUNCTION ORDER.

WARNER GREEN,
Solicitor for the State of Georgia.

J. A. DAVIS,
Special Counsel.

ATLANTA, GA.

LAMAR HILL,
Of Counsel.

CHAS. P. BYRD, STATE PRINTER.

AUTHORITIES CITED IN THIS BRIEF.

State of Georgia, etc. vs. Tennessee Copper Co., et al., 206 U. S. 230.

IN THE

Supreme Court of the United States

No. 1 ORIGINAL—OCTOBER TERM 1914

THE STATE OF GEORGIA, etc., *Complainant* *vs.* THE TENNESSEE COPPER COMPANY, and the DUCKTOWN SULPHUR, COPPER AND IRON COMPANY (Limited), *Defendants.*	Motion of Complainant to enter injunction decree against the defendant, the Ducktown Sulphur, Copper and Iron Company (Limited).

STATEMENT OF FACTS.

This case was brought originally by the State of Georgia against the defendants seeking a permanent injunction from this court to restrain defendants from liberating into the atmosphere sulphur dioxide and other noxious fumes and gases claimed by the State to be injurious and deadly to plant life, from their smelters in Tennessee, located respectively one half mile and two and one half miles from the northern boundary line of the State of Georgia. Georgia vs. Copper Companies, 206 U. S., page 230.

It was claimed by the State that these fumes and gases being liberated into the air were brought by the winds into and over

the State of Georgia, polluting the atmosphere, injuring and killing the timber and forests of Georgia, injuring the soil and causing erosion thereof, causing the drying up of water courses and seriously injuring the agricultural and timber interests of that section of the State.

After the evidence of many hundreds of witnesses for both complainant and defendants had been filed with the court, a decision was had in May, 1907, in which the court held that the State of Georgia in her sovereign capacity had the right to a permanent injunction against the defendants if she insisted upon her extreme right. 206 U. S., page 230.

The State of Georgia pursuing her policy of "Wisdom, Justice and Moderation," did not at that time insist upon a final decree, but by resolution of her legislature allowed these defendants time in which to install certain appliances and apparatus which it was claimed by defendants, would eliminate the gases and fumes complained of from the atmosphere, thereby abating the nuisance.

From time to time thereafter the State has postponed its motion for final decree in the hope and expectation that the statements and claims of the defendants would be realized.

In 1913, by resolution of its legislature, it entered into a stipulation, now on file in this court as part of the record in this case, with the Tennessee Copper Company, granting said defendant a continuance of three years in which to further perfect its plant and apparatus for the elimination of the fumes, and whereby the Tennessee Copper Company agreed to curtail its operations, during the growing season for crops and farm products to such an extent that there would be no gases or

fumes eliminated from its plant, and in addition it agreed to deposit a certain sum of money each year to be awarded by a board of arbitration to all citizens of Georgia claiming any injury at its hands.

By this stipulation the State did not surrender or in any manner abridge its right to insist upon a final injunction against the Tennessee Copper Company, and in the event of a breach of the agreements therein contained it will ask this court for a final and permanent injunction. The main consideration for this stipulation was the abatement of the nuisance.

The State offered to enter into the same or a similar stipulation with the other defendant, the Ducktown Sulphur, Copper & Iron Company, Limited, but this defendant declined and refused to treat with the State or to enter into any stipulation or agreement whatever, whereby it would curtail its operations so as to eliminate the fumes during the growing season.

Upon complaint of its citizens during the year 1913, of continuing and serious damage and injury, the State by its Attorney General, filed with this court the motion now before it for a final decree of injunction against the defendant, the Ducktown Sulphur, Copper & Iron Company, Limited.

In response to this motion by the complainant, the said defendant filed with this court a petition setting out that conditions existing in Georgia were greatly improved since the granting of the original decree and that there was now no damage or injury from sulphur fumes being done within the State of Georgia, and praying leave to establish this fact by evidence.

The court granted the defendant the right to take proof and granted the complainant the right to also take proof in rebuttal

to that for the defendant. After both defendant and complainant had examined a large number of witnesses the defendant again asked leave of the court to submit further evidence in rebuttal to that of the State, after the time had expired originally allowed by the court for taking evidence. This prayer was granted and additional evidence for the defendant was taken, a large number of witnesses being examined.

The sole issue now before this court is whether or not the nuisance originally complained of and still complained of by the State has been abated, and we submit that the defendant, the Ducktown Sulphur, Copper & Iron Company has assumed the burden of proof in such issue.

BRIEF AND ARGUMENT.

By the order allowing the taking of evidence the parties were confined solely in such evidence, to the change existing in conditions since 1907. From the outset the court will observe from the record that a great part of the evidence of the defendant is therefore irrelevant as it attempts to and does go back to the origin of the copper industry in Tennessee and conditions then existing in Tennessee and Georgia, and does not bear in any way upon the issue now before the court.

It will also be observed that almost all of the evidence introduced by the defendant is negative in its nature and we submit is not sufficient to carry the burden of proof resting upon the defendant. Many witnesses testify that they have observed no damage in certain localities or at certain times and some testify that they have never observed any damage whatever in North Georgia due to the said fumes and gases.

It will also be observed that a large number of witnesses who testify in the present issue, by their own admissions, and by

reference to the original record in this case, testified in the original case that there was no damage existing in North Georgia and that none had been done by the defendants at that time, and this court found in that issue, as a matter of fact, that damage had been and was being done at that time sufficient to warrant the court in allowing the State an injunction against the defendants. 206 U. S., p. 238. In that decision the Court said: "The proof requires but a few words. It is not denied that the defendants generate in their works near the Georgia line large quantities of sulphur dioxide which becomes sulphurous acid by its mixture with the air, and that it is often carried by the winds great distances and over great tracts of Georgia land, etc."

The court will also observe that a great number of witnesses are employees of the defendants or one of them, or have been at some time, and have testified time and time again for the defendants not only in this cause but in almost every action at law or in equity brought against the defendants and have consistently sworn that there was not and never had been damage to the State, its timber, forests or agricultural interests due to or caused by the fumes from the plants of the defendants.

A large number of the defendant's witnesses testify that there is no damage or injury existing in North Georgia. A large number of witnesses for the defendant admit that there is damage existing but it is the contention of the defendant Company that this damage is caused by and due to the operations of the other defendant, the Tennessee Copper Company.

The defendants in this case are the only source of information for this court as to the relative operations of the two companies, their consumption of ore, their output of copper, their output of sulphuric acid which is manufactured, it is claimed, by defendants, from the sulphur dioxide liberated from the ores. These defendants have failed utterly to show to the court by one

scintilla of evidence, these facts, and the court is left absolutely in the dark by them as to what each company is doing.

It is claimed by the defendant that they have spent large sums of money for the erection of acid plants or "acid chambers" for the condensation of sulphur dioxide into sulphuric acid and that they are now condensing all of the sulphur dioxide liberated from the ores smelted by them, and by this method eliminating from the atmosphere the fumes and gases complained of. They call especially to the attention of the court the enormous sums claimed to have been expended and rely upon this as evidence of alleged good faith in their efforts to eliminate the fumes. It is submitted by the complainant that even if these contentions of the defendant are true, it is at this time operating upon a much larger scale than in 1906, smelting a much larger amount of green ore and thereby creating a much larger amount of sulphur dioxide, and that the relative amount of sulphur dioxide emitted in 1906 was less than that emitted in 1913 and 1914. The complainant charged this through all of its evidence, and even in the taking of rebuttal proof by the defendant not one word nor one figure was introduced to controvert this charge.

It is also submitted that not one word of evidence was introduced showing that the acid plants or "chambers" were condensing all of the fumes created in the furnaces of the company.

It is further submitted that the question of good faith is not at issue, and even though the defendant had spent ten times the amount claimed by it to have been expended in the development and erection of its plants and acid chambers, yet this court would not consider that fact in the determination of this issue, and it would be entitled to no consideration, for if there is injury and damage being done in North Georgia the complainant is entitled to its final decree and injunction regardless of the good faith of the defendant.

It may be claimed by the defendant that the value of property in North Georgia alleged to be injured by gases from its plant is relatively small as compared to the value of the interests of the defendant. The complainant submits that this issue is not one involving the question of values, even though it were conceded that the contention of the defendant was correct, which however is not conceded,—but the State comes before this court as a sovereign, with all the rights of a sovereign to and over the lands within its domains and complains of injury and damage to its lands, timber and forests, and not the lands timber and forests of any individual. It is not the individuals, primarily, for whom the state is seeking protection but itself and its interests and its sovereign ownership of the property injured.

This Court said in its original decision in this case "Some peculiarities necessarily mark a suit of this kind. If the State has a case at all, it is somewhat more certainly entitled to specific relief than a private party might be. It is not lightly to be required to give up quasi sovereign rights for pay; and, apart from the difficulty of valuing such rights in money, if that be its choice it may insist that an infraction of them shall be stopped. The states, by entering the union, did not sink to the position of private owners, subject to one system of private law. This Court has not quite the same freedom to balance the harm that will be done by an injunction against that of which the plaintiff complains, that it would have in deciding between two subjects of a single political power. Without excluding the considerations that equity always takes into account, we cannot give the weight that was given them in argument to a comparison between the damage threatened to the plaintiff and the calamity of a possible stop to the defendant's business, the question of health, the character of the forests as a first or second growth, the commercial possibility or impossibility of reducing the fumes to sulphuric acid, the special adaptation of the business to the place. It is a fair and reasonable demand on the part of a sovereign that the air over its territory should not be polluted on a great scale by sulphurous acid gas, that

the forests on its mountains, be they better or worse, and whatever domestic destruction they have suffered, should not be further destroyed or threatened by the act of persons beyond its control, that the crops and orchards on its hills should not be endangered from the same source. . . ." State of Georgia vs. Tennessee Copper Company, et al, 206 U. S. 237.

Further therein, the court says "If the State of Georgia adheres to its determination, there is no alternative to issuing an injunction, after allowing a reasonable time to the defendants to complete the structures that they now are building, and the efforts that they are making to stop the fumes." Id. p. 239.

In all cases of the nature of the one at bar the best evidence which can be submitted to the court is not the evidence of experts who testify from observation of conditions for a short time or at certain intervals, nor is it photographs showing sections of the country at long range, where the camera might include in its focus a portion of the landscape where no damage exists, when a short distance away there might be sections entirely devastated,—and it is shown by the evidence that the injury is not uniform,—nor is it in opinions based upon hypothetical questions propounded by counsel, nor in the evidence of "committees" or "parties" going through the country observing conditions which they find close at hand; but the best evidence is that of the citizens of the affected country who live their daily lives amid the existing conditions, who toil and labor for their daily bread upon the soil which supports them, whose livelihood depends upon the success or failure of their crops, whose entire store of worldly goods consists of the few acres of timber and crops which they own and cultivate, and who for years have observed the effect of the fumes and gases from the defendant's plant upon their growing things and know the danger incident thereto, and who have watched their crops and garden products grow and thrive only to be blighted and withered by the devastating agent which comes like death and reaps its harvest of

lives of plants and trees. It is they who know more than any others on earth of things as they exist and who tell the court in their simple way of the destruction wrought by the product of the defendant's plant.

We have brought before the court witnesses of this class, farmers who have spent their entire lives in the affected region of North Georgia, timber men who have lived in the forests and made the study of practical forestry their life work, who have seen the smoke carrying the fumes from the stacks of the defendant directly over and into the forests, who have noticed the conditions existing immediately before and after this visitation and who tell the court of the sudden blighting, withering and death of the trees after the smoke has been upon them.

The only purpose which the expert testimony can serve is to show that sulphur dioxide is injurious and even deadly to plant life, but this fact has already been established by this court in this case. It is shown by the experts for the complainant and defendant both in the original case and in the original issue and is undenied and uncontroverted that 1 part of sulphur dioxide to 10,000 parts of air is deadly, that one part of sulphur dioxide to 100,000 parts of air is seriously injurious and that even 1 part to 1,000,000 parts is injurious if the contact with the plant continues for sufficient length of time. (Evidence, p. 838.) It is also shown by these experts how the injury occurs and why. The physiology of plants and trees is gone into and the functions of the different organs explained and the effect on them of the fumes.

But for the real cause of the injury, the visitation of the smoke and fumes and the damage immediately resulting, the only evidence worthy of consideration is that of the farmers and timber men themselves, who see the smoke descend and immediately thereafter see the injury to plant life.

In the investigation of all actions at law or in equity one of

the primary elements in the consideration of evidence is the interest or lack of interest of the witnesses. It will be observed that almost every witness introduced by the defendant was employed by it for the purpose of making a tour of investigation to show that no damage existed. And it is only human that witnesses of this nature should consciously or unconsciously endeavor to find that which their employer desires found, that is in this case, that there is no damage in North Georgia.

It might be said by the defendant that the witnesses for the state are also interested in that they are the landowners whose property it is claimed, is affected and damaged. Conceding this for the sake of argument, the attention of the court is directed to three witnesses, who do not live in North Georgia, who have no property interests there but who testify as a matter of duty and under the direction of the Federal Government. They are Dr. W. T. Hedgecock, H. L. Johnson and E. B. Clark, three employees of the Bureau of Forestry of the United States.

Dr. Hedgecock testifies (Complainant's evidence, p. 2) that he is the plant pathologist of the bureau, that he has devoted his entire life to this study, that under the direction of the Bureau he has devoted the last several years to the study of the effect of sulphur dioxide from copper plants on plant life, and that in the course of his investigations he has visited almost every plant of like nature to those of the defendants, in the United States.

He testifies as to the effect of sulphur dioxide, the manner of its effect, the method by which the functions of certain organs of the tree are stopped and death brought about, and to the geographical extent of the injury. He shows that there are three zones of injury existing around all copper plants of this nature and particularly about the plant of the defendant. The first or barren zone, the second or zone of acute injury, the third or zone of chronic injury, the fourth or zone of invis-

ible injury; the zone of acute injury extending for a distance of six to ten miles from the smelter. (Evidence, p. 5.) He testifies that on one trip he had personally observed severe damage resulting from the plant of the defendant in Georgia as far south as 10 miles from the plant. (Evidence, p. 8.) He testifies positively and unequivocally, that there is smelter injury existing in North Georgia today and that every fact points to this condition and that the injury observed by him was to a large extent fresh and was injury of the present or the immediately preceding years. (Complainant's evidence, pp. 4 and 5.) He testified also that the fumes from the present defendant company's plant were causing injury to the affected sections. That said plant was located in the geographical center of the zones of injury (Evidence, p. 7) and that he had personally observed and seen the smoke rising from the plant of this defendant and being brought by the winds and air currents directly into the State of Georgia. That he had seen the smoke from the stack of the Tennessee Copper Company also rise into the air and that this smoke rose to a much greater height than that from the Ducktown Company's plant and was carried farther away than the latter. He testified that the injury for the first 6 to 15 miles in Georgia, was being done by the present defendant the Ducktown Sulphur, Copper & Iron Company (Evidence, pp. 7, 16, 17). This opinion was based upon actual observation and investigation by the witness.

Dr. Hedgecock made several trips of investigation through the northern counties of Georgia and made close and minute observations of the forests and the injury to them. He introduced samples showing the injury, which samples were obtained by him on these trips. He established beyond question that there is injury being done and that it is being done in large part at least, by the present defendant. He has watched and seen the smoke, the vehicle for the fumes, come from the defendant's plant directly over and into the mountains of North Georgia and has seen it settle among the trees and plants and forests. (Evidence, pp. 16 and 17.) He also testifies that the injury is not uniform in the country and the action of the smoke is not uni-

form; that its travels are greatly affected by the prevailing air currents and that the atmospheric conditions regulate the rapidity of diffusion of the gases and thereby the injury caused by them. (Evidence, pp. 8 and 17.) He testifies that all of the north Georgia section visited by him was greatly injured and that such injury was caused by sulphur dioxide. (Evidence, pp. 6, 8, 9, 16, 20.)

Messrs. Johnson and Clark corroborate Dr. Hedgecock in all of his evidence, and these three witnesses are entirely disinterested and did not and could not receive one penny for their services. The State desired to get disinterested witnesses for use in this case and through its governor applied to the Federal Government for experts to make the investigations and to give evidence. The state has not even introduced its own officials but has relied solely upon the testimony of the government experts.

The burden being upon this defendant, as before stated, there are two methods and only two, by which they could have successfully carried that burden,—the first by showing that no smelter injury exists in North Georgia; the second, by showing that if such injury does exist that it is attributable not to the operation of their plant but to that of the Tennessee Copper Company.

The existence or non-existence of smelter injury, we submit, is so notorious in the alleged affected section of the state that it would be a matter of no difficulty to establish it. But not only has the defendant failed to establish its non-existence, but on the contrary many of its own witnesses swear that there is smelter injury. True, some of its witnesses, in their eagerness to serve their employer, have gone beyond the contention of the defendant, and have testified to the negative proposition that they have seen no damage whatever, but their testimony is of no value as against that of the numbers of witnesses on be-

half of the state who swear that they have seen and smelled the smoke which carries the fumes and have seen with their own eyes its effect upon the growing things. We say that these witnesses have gone beyond the contention of the defendant, for the defendant has, by the class of evidence introduced abandoned its stand, if it ever took any, on the first proposition, and has relied solely upon the second proposition stated above, that is that the damage, which they virtually concede exists, is being done, not by them but by the Tennessee Copper Company.

Having thus virtually abandoned the first proposition, the defendant comes into court on the sole remaining issue that the Tennessee Copper Company is the cause of the injury instead of itself—and this is the only question for this court to determine.

They do not come before the court in an open, frank manner and make this charge, but by inuendo, insinuation and suggestion, would have the court believe that this is the fact.

They do not bring the best evidence to establish this fact, and particularly do they fail to introduce the one man whose evidence would be authoritative on this subject, their superintendent, general manager and expert chemist and mining engineer, Mr. Renwick, but rely upon the evidence of Lamoreaux, an employe of a rank subordinate to Renwick, unsupported by the books, which they have utterly failed to produce, and upon the testimony of McCandless and Gilchrist, the latter carrying his testimony to the point of absurdity by swearing that no more sulphur dioxide from the plants of the two defendants was present in the air in North Georgia than existed daily in such cities as Chicago and Cleveland, and with no more injurious effect. (Evidence, p. 834.)

Why was it that the defendant failed to produce this all-im-

portant witness? Why not give the court the benefit of the testimony of this man who is in charge of the entire operations of the company? We submit that it was for the reason that Renwick, being an engineer of the highest standing, a man, who so far as we know, is above reproach, could not jeopardize his position as an engineer and chemist by stretching or altering facts in the slightest degree, and that the Company knew that such testimony as he would give would not support their contentions, and it is a well known engineering fact that it is an utter impossibility, under known methods, to eliminate as much as fifty per cent of the sulphur dioxide from the fumes emitted from the plants of copper smelters.

Instead of bringing Renwick, they introduce his assistant, Mr. Lamoreaux, who testified from a memorandum sheet evidently furnished him by the bookkeeper or some other person not under oath (Evidence, p. 805), as to the output of the company, the object being to show by the figures, that all of the sulphur present in the ore was accounted for by the amount of sulphuric acid shipped from the plant together with the sulphur left in the "flue dust," except an amount escaping into the air, so negligible that it had no injurious effect upon plant life.

The State, through all of the testimony of Lamoreaux, objected to his evidence as not being the best, and insisted upon the production of the books of the Company as being the highest and best evidence obtainable, and questioned the accuracy of the figures given by Lamoreaux and insisted that they were incorrect and did not show anything on which the court could legally or morally rely. (Evidence, p. 805.) The State still insists upon its objections and submits that all of this evidence is inadmissible for the reasons given in the record, and that therefore there is not one scintilla of evidence in the entire case as to the consumption of ore, the percentage of sulphur therein and the amount of sulphuric acid produced by the plant to sustain the contention of the defendant that all of the sulphur is

accounted for, but on the other hand the court, we submit, is authorized under the evidence to find that all of the sulphur contained in the ore is emitted into the atmosphere in the form of sulphur dioxide.

Not only did the defendant fail to produce the best evidence, but failed to produce the best secondary evidence, if such would be admissible, to-wit: Mr. Barron, their bookkeeper, as shown by the testimony of Lamoreaux (Evidence, p. 819). Barron could have been put under oath and could have testified that the facts contained in the memorandum used by Lamoreaux were correct. But they did not even do this. No did they produce any other man, than Lamoreaux, connected with the operation of the plant. The State showed on cross-examination of Lamoreaux the names and titles of the officials connected with the operation of the plant (Evidence, p. 819) but not one of these men was put on the stand to show any of the facts about which they could testify with more certainty than any one else, and the court is left in complete darkness as to the true situation as regards consumption of ore and output of acid, except such light as is thrown on the matter by the evidence of Lamoreaux which we submit is inadmissable.

The man who could, above all others, speak with certainty of the operation of the acid plant is Mr. Larison, the superintendent of the acid plant, and he is not called as a witness. In fact the record shows that they have not given the court the benefit of the expert knowledge of a single employee in authority, except Lamoreaux.

This man could have spoken in detail on the size of the acid chambers, the output of acid, the capacity, the successful or unsuccessful operation of this plant from day to day, and this is the most vital point at issue in this case. The question naturally arises, why did they not introduce this all-important witness?

Another man, who, next to the superintendent of the acid

plant, was important, if they desired to disclose the truth as to the operation of the plant, was Mr. Nolde, the smelter superintendent, who could have told all about the method of smelting the ore and the method of feeding the fumes from the smelters to the acid chambers, the uniform sulphur contents of the ore, the method of making the fumes into sulphuric acid, and in fact he could have spoken from personal knowledge on all these vital questions, as to which the court is left in the dark. Why is this evidence kept from the court, if it is not for the purpose of keeping the light off the very subject on which the court desires enlightenment?

These witnesses were all in the jurisdiction of the court and were in and under the control of the defendant and could have been easily produced.

We submit that these are strong circumstances against the bona fides of their efforts to give the court all the knowledge on the subject at their command.

Another significant fact in this connection is that the defendant carried its witnesses a distance of from one hundred to one hundred and fifty miles from the scene of operation and injury, to Chattanooga and Knoxville, Tennessee, when as admitted by the defendant (Evidence, p. 1199) there was a competent commissioner and a court house within two miles of their plant before whom and in which this evidence could have been taken. It was not their desire to have the examination conducted where the evidence of smelter injury could be pointed out to the witnesses as they were on the stand and their attention called to it, and this fact made a part of the record.

On the other hand the State conducted its examination in the section alleged to be affected and it was a favorite method of cross examination with the defendant's counsel to ask the witnesses if they could point out any smelter injury from the win-

dows of the court room, in which the hearings were, at Blue Ridge, Georgia. (Evidence, pp. 91 and 92.) If the evidence of the defendant had been taken at Ducktown, Tennessee, the nearest court house to their witnesses and their plant, the State, by pursuing the same tactics on cross examination could have shown by every witness put up by the defendant, and had it made a part of the record, that the hills around Ducktown are as barren and desolate of plant life as the Sahara desert.

Under the testimony of Lamoreaux, McCandless and Gilchrist the defendant claims that it curtails its operations and output during the growing season, and fixes this growing season for the months of June, July and August of each year (Evidence, pp. 817, 820), when under all of the evidence, including the stipulation between the State and the other defendant, the Tennessee Copper Company, of file in this case, the growing season extends from the 10th of April to the 1st of October, each year, and the State contends, that under these facts, and taking into consideration the additional fact that the Ducktown Company curtails operations for only three months of each year and the Tennessee Company for five and one-half months each year, the Ducktown Company operates on as large a scale and emits more sulphur dioxide from its plant than its larger neighbor, the Tennessee Company, during the growing season from April 10th to October 1st each year.

While the Tennessee Copper Company has seven furnaces, it operates only two of them during the growing season as fixed in its stipulation with the State, while the Ducktown Company operates at full capacity except for three months according to its own admissions. (Evidence, pp. 817 and 820.)

While the Tennessee Company operates two furnaces during the five and one half months mentioned, and the Ducktown Company operates possibly only one during the three months of June, July and August, it is conceded by Mr. Lamoreaux (Evi-

dence, p. 803) that the acid chambers of the Tennessee Copper Company have a daily capacity of 1,200 tons, while the capacity of the Ducktown Company's acid chambers according to their own figures as given in Lamoreaux's exhibit No. 1, cannot be more than one hundred and thirty-five tons per day, if that much, the exact daily capacity having been studiously avoided by every witness for the defendant having any knowledge of the subject. The method by which we arrive at this conclusion is by figuring from the yearly output of acid as given by Lamoreaux in his exhibit No. 1.

Instead of bringing the officials of the company who would have knowledge of the matters about which they testified, the defendant has relied upon Lamoreaux and Sherman Reese. We have already called the attention of the court to the testimony of the former.

The defendant attempts by Sherman Reese to show to the Court the comparative size of the two plants of the defendant and the Tennessee Copper Company and the relative operations of same. Reese is an employee who testifies that he has been in the employ of the company for a long number of years and whose duties are to prepare evidence for use in the trial of cases against the Company. He is not connected in any manner with the operations of the plant, knows nothing of it and nothing of the operations of the Tennessee Copper Company as testified to by him on cross examination (Evidence, p. 627) and yet the company relies upon his evidence and keeps back men who could give the court definite information as to what the company was doing. Reese is simply an ordinary countryman whose duties have consisted of leading self-styled "commission" and "parties" through the country entertaining them at the expense of the defendant and showing them that there was no damage in North Georgia to his and their entire satisfaction. His knowledge is limited to that of a guide and his sole duties seemed to consist of issuing "commissions" to those witnesses who styled themselves members of "commissions" visiting the affected dis-

trict, since 1901, since nowhere is it shown that there was ever any authority creating the commission other than this ever ready witness, Reese. (Evidence, pp. 638-646.)

We submit that the defendant has utterly failed to carry the burden of proof resting upon it, and that the State was under no obligation or necessity of introducing any evidence in rebuttal of that for the defendant, but out of abundant caution, and desiring the court to have all the facts obtainable at hand, and to have the benefit of all the knowledge of the citizens of that section and their personal experiences and observations, the State produced a number of witnesses who had lived in that affected territory and who tell the Court of the daily, weekly, monthly and yearly havoc being wrought by these fumes upon their crops and timber. The State has not confined itself to any section of the affected country in getting witnesses but has brought them from every district claimed to be injured by the fumes from these plants, and their evidence has not been successfully rebutted. Not only have we shown by them that damage does exist but we have shown conclusively that such damage is attributable directly to the Ducktown Company by the evidence of the witnesses who testify that on certain days when it is shown the plant of the Tennessee Company was closed down, that the injurious gases were present in Georgia injuring and damaging plant life. The names of these witnesses and the pages on which their evidence appears are given below.

The only evidence produced by the defendant on this point is that of several witnesses who swear to the negative proposition that they have seen no damage, and most of these were in the employ of the Company and have been in its employ for a long time and have testified in various cases and at various times for it and who testified in 1906 that no damage existed when as before stated this Court found that damage did exist.

The witnesses for the state who testify as to the positive fact

of present damage, show that not only does this damage exist, but go to the very root of the matter here at issue and show that the damage in 1913 was as bad as any year previous to the decision of this court in this case in 1907, and that in 1914 conditions were worse than ever before in the history of the smoke trouble in Georgia. (James F. Teems, page 70; J. H. Clonts, evidence, page 82-85; C. S. Northcut, page 94; J. G. Adams, 365-66; Ashbury Henson, pages 99 and 100; W. H. Carver, 462; W. A. Painter, 107; John Miller, 190-191-2-3; W. S. Henson, 112; C. J. Trammel, 294-5; Geo. Henson, 119; W. H. Shippen, 325-339; F. E. Shippen, 394-5-6-7, 399; Geo. Rodgers, 124-125, 126, 127; J. P. Vestel, 171; J. M. Carter, 208; T. S. Johnson, 186-187; D. M. Buckhannan, 205; W. M. Bailey, 219; W. M. Barnes, 257-8; L. C. Allen, 230-231; B. H. Sebolt, 270-71; J. J. Turner, 249; A. J. Bell, 278.)

Rebutting the idea that the Tennessee Copper Company is doing all the damage in the State of Georgia the following witnesses show that during the month of May, 1913, on days named, while the Tennessee Copper Company's plant was closed down, that the smoke carrying the fumes of sulphur was seen, smelled and its effects noted in Georgia, to-wit: (J. P. Vestel, p. 170; T. R. Harkins, p. 242; W. M. Barnes, p. 263-4; A. J. Bell, p. 279; B. F. Weeks, pp. 351-354; J. H. Setzer, p. 456.)

It was shown by G. M. Panhorst, an employee of the Tennessee Copper Company, that this Company's plant was closed down on the days fixed by the witnesses, as the time when the damage above referred to was noted. (Evidence, Vol. I, p. 224.)

It was shown by this witness that the Tennessee Copper Company was closed down and smelting no ore whatever from the 23d day of June to the evening of the 6th day of July, 1914, during which time the following witnesses testify on behalf of the state that they saw, smelled and noted the injurious affect of

the fumes in Georgia, to-wit: R. H. Smith, pp. 196-201; J. P. Vestel, p. 168; D. M. Buckhannan, p. 205; L. C. Allen, p. 231; J. J. Turner, pp. 248-249; B. H. Sebolt, p. 267; W. T. Angel, pp. 272-275; W. H. Martin, p. 286; C. J. Trammel, p. 295; F. E. Shippen, p. 396; J. H. Setzer, p. 455; W. H. Carver, p. 461.

It was shown by these witnesses that at this time the Ducktown Copper Company was in operation and emitting the fume laden smoke, the cause of the damage above referred to, and that the smoke was seen coming from the plant of the Ducktown Copper Company during this time. (Evidence, pp. 248-9, 170-168, 205, 224, 201, 196, 231, 242, 263, 279, 286, 295, 272, 268.)

In introducing this evidence, the state has not gone into one certain locality and produced members of camping parties and self-styled commissions who testify, but has brought before the court the farmers and timber men living in the localities alleged to be affected, who tell of damage and injury from the smelter fumes in every section of north Georgia contiguous to the plants of the defendant.

It is not contended by the State that every foot or every acre of ground in these sections is affected or damaged, for it is an established fact under the evidence that the fume-laden smoke will come to earth blighting the growth at one spot and then rise again into the air to descend some distance off, and that one or several acres or more here, there and yonder will be damaged while the intervening territory will not be touched. The defendant's expert, Prof. Bain, testifies to this fact. (Evidence, pp. 945-946.)

But the main fact is established that generally speaking the entire section of North Georgia is damaged and so materially

damaged that it is impossible for the citizens of the state to earn their livelihood at farming, that they can no longer raise oats, or small grain, that the peas and potatoes are seriously affected each year and that the timber is being damaged all to the detriment of the sovereign rights of the State of Georgia. Many witnesses testify to these facts as follows: Geo. Henson, pp. 119-121; Geo. Rodgers, p. 124; A. E. Sharp, p. 143; W. S. Henson, pp. 115-116.

The state began its evidence by taking up the section immediately south of these plants and adjacent to the north boundary line of the state and extending from the state line a distance of ten to twelve miles south and south west of the plant of the defendant. This section embraced the points known on the maps introduced as Epworth, Minola, Higdon's Store, Fighting Town Creek, Grannymar Mountain and adjacent points. This section is about ten to twelve miles square. This is the section visited by the government experts, Dr. Geo. W. Hedgecock and E. B. Clark, and H. L. Johnson, government foresters, and Messrs. Vestal, citizens of Georgia on the 9th and 10th days of August, 1914. (Evidence, pp. 6-305.)

It is proved by the State that smelter injury is notoriously visible in all this section. (Evidence, Vol. I, p. . Dr. Hedgecock, pp. 9-13, E. B. Clark, pp. 303-4-5-315; H. L. Johnson, pp. 56-57, 60; J. P. Vestal, pp. 170-71; J. H. Vestal, T. R. Harkins, pp. 236-237-8-9; W. M. Barnes, pp. 258-9; G. F. Weeks, pp. 257-8; J. G. Adams, pp. 359-360, 361-2-3, etc.; F. E. Shippen, pp. 402-304.)

The State next went to the Mineral Bluff, Flat Creek and Morgantown sections of Fannin County, Georgia, all of which points lie southeast of the plant of the defendant and embrace a section of country about eight by twelve to fifteen miles in area. It is shown that in these sections smoke has been present in the years 1913 and 1914 and is visible and so strong that it

can be smelled. These facts are not only shown by the State's witnesses but are admitted by witnesses introduced by the defendant, who live in the Mineral Bluff section. (Evidence, Vol. II, p. 278; A. J. Bell, p. 278.)

These facts are shown by the following witnesses for the State. (Evidence, Vol. I, L. C. Allen, pp. 230-231; J. J. Turner, p. 247.)

The State next went to the section of country east of Ellijay, Gilmer County, Georgia, known as the Turniptown section. This point is about twenty to twenty-four miles almost due South from the plant of defendant. It is shown that in the year 1914 enormous damage has been done to large commercial apple orchards on the Turniptown Mountain, facing this plant, also to the wheat crops in that community and to the small orchards and farms, to the forests and to plant life generally, one witness, F. E. Shippen, giving the dates on which the smoke from the smelter of the defendant visited the section. (Evidence, Vol. 1, pp. 394 to 400.) Other witnesses testify to the same effect. Clonts stating that the smoke was so bad on one day that it seemed as though the woods were afire. That he could smell the smoke and that it was sulphur smoke, and that it was the smoke emitted from the defendant's plant as he had been to the plant and had there seen and smelled the smoke which was identical with that seen in the woods on the day mentioned. (Evidence, Vol. I, pp. 80 and 90.) That immediately after this smoke lifted the effects were visible on growing vegetation, and especially upon the apple orchards in that community and as a result of such injury the most of the young apples, which he stated were as large as the end of his thumb, fell off. (Evidence, Vol. I, p. 82.) In addition to the witnesses named above, these facts are shown by the following witnesses. (Evidence, Vol. I, C. S. Northcut, 94, 99-100; F. E. Shippen, 393 to 395, 398-99; Asbury Henson, 99-100, 101; W. A. Painter, 107-109; W. S. Henson, 111-112-113; Geo. Henson, 118-119, 121; Geo. Rodgers, 124-125, 127; A. E. Sharp, 140-141.)

The State then introduced witness from the section south southwest of Blue Ridge, known as Board Town Creek mountain. It is shown by these witnesses that they stood on this mountain on July 3rd, 1914, at which time the Tennessee Copper Company's plant was closed down (Evidence, Vol. 1, p. 219) and saw the smoke issuing from the Ducktown plant and coming into the state of Georgia and into that immediate neighborhood where they could see it in the coves and smell it. They saw the injurious effects on timber and crops immediately thereafter and testify that it was smelter injury. (Evidence, Vol. I, C. J. Trammell, 295; B. H. Sebolt, 267; D. M. Buckhannan, 205.)

The next witnesses for the State are brought from the section eight miles northwest of Ellijay, in Gilmer County, which is about fifteen to eighteen miles south of the defendant's plant. Their evidence shows that on various occasions in the years 1910, 1911, 1912 and especially in the years 1913 and 1914 these sulphurous fumes have come into this neighborhood and killed and injured timber and growing vegetation and that the conditions in 1914 were worse than in any previous year. (Evidence, Vol. I, J. W. Withrow, 127, 128, 129; A. E. Sharp, 135, 136, 139, 140.)

From this section comes A. E. Sharp who testifies as follows: That he stood on the tops of the various mountains (naming them, p. 149) in North Georgia, and watched the smoke issuing from these two plants and has observed its course and on various occasions has seen it come into the State of Georgia and settle in the coves. (F. E. Shippen, 150, 398.) That the two volumes of smoke can be distinguished. (Evidence, Vol. I, pp. 136 and 137.) This witness shows that as a woodsman he has been over practically all of Fannin and Gilmer and a part of Union County in the smoke affected section of North Georgia; that over the whole or practically the whole of this section there is serious smelter injury. (Evidence, Vol. I, pp. 139, 140, 153, 154, 155, 156.) He shows that much of this injury was recent and

some as late as within a week of the time he gave his evidence. (Evidence, Vol. I, p. 140.) He also shows the visible appearance and effect of smelter injury. (Evidence, Vol. I, pp. 140, 142, 143.) See also the evidence of F. E. Shippen, 395, 399; J. H. Clonts, 80, 182; Asbury Henson, 100, 101, 102, 103; Will H. Shippen, 320, 323; Dr. Geo. W. Hedgecock, pp. 18, 13, 16 and 17; E. B. Clark (government expert), 429, 304; J. P. Vestel, 164; H. L. Johnson (government forester), 60.

It is shown by the State that all or practically all of the hemlock timber in this section of North Georgia has been killed and that this section is the natural home of the hemlock. (Evidence, p. 20, Dr. G. W. Hedgecock, W. H. Shippen, p. 328.)

It is shown that North Georgia is especially adapted to the growth of Irish potatoes, oats, wheat and rye and the evidence shows that in practically all the neighborhoods and sections above referred to they no longer pretend or try to raise oats or cowpeas and such wheat as is sown is generally seriously damaged if not entirely killed and destroyed. One witness who runs a threshing machine, testified that whereas he used to thresh a great many oats, now he finds no oats to thresh in that section. (Defendant's Evidence, p. 671.) That cowpeas, which were once a material part of the crop, are now being seldom planted by the farmers because they have been so often killed in past years. (Geo. Henson evidence, pp. 119, 121; Geo. Rodgers, p. 124; A. E. Sharp, p. 143; Dr. Geo. W. Hedgecock, p. 13; W. S. Henson, pp. 115, 116.)

A. E. Sharp testifies he has not tried to raise peas in seven or eight years as the smelter smoke kills them "so bad." (Evidence, p. 143.)

We call the court's attention specially to the evidence of J. G. Adams (Evidence, p. 358). His evidence shows that he went

into the neighborhood of Minola, Higdon's Store, and Barnes Mountain section of Fannin county, Georgia, about six to ten miles almost due south from the defendant's plant and at various points took photographs of the forests, which photographs are made exhibits to his deposition numbered from 1 to 26 inclusive. Numbers 20 and 21 of said exhibits show the Ducktown Company's plant. The other exhibits, while they do not show the full extent of the injury as exists in North Georgia, do show unmistakable evidence of great injury to the forests in that section. Photographs do not and can not show the burned and parched leaves in a manner true to nature and as they really are. This fact is shown by the evidence of this photographer and by the other witnesses who were with him when they were made. (Evidence, pp. 362, 363, etc.) It is impossible for any photograph to show the situation as it is, the burning and parching, and the destruction and havoc wrought being far greater than it is possible for any invention of science to depict. This photographer shows that he is an expert in this line of work, having photographed forests and landscape views to be used in geographical work. He also shows and testifies that it is an impossibility to take a color photograph absolutely true to nature, and this statement is corroborated by the photographs introduced by the defendant in this case, where in many instances the colors of objects shown in the picture are not the true natural colors, which fact is noticeable to any observer of the photograph. For instance fence rails and roofs of houses, roads and banks do not have their natural color but appear blue or discolored, sedge grass, weeds, leaves and small vegetation cannot be distinguished by their colors, as will be seen from the various color photographs introduced.

But the main argument against photographs as evidence is that, as stated in the beginning, the camera might include in one picture a portion of territory not affected by fumes, when a few yards away might lie a territory of entire devastation.

The photographs introduced by the defendant in this case

were all taken by a man who had been in the employ of the defendant on a number of occasions and under the direction and supervision of Sherman Reese, for many years an employee of the defendant and the man in charge of the work of preparing evidence for the company for use in cases of this sort.

It is strange that in the number of photographs introduced by the defendant there is not one which shows their plant in operation, the smoke issuing from the stack and the entirely devastated sction surrounding it where the hills are barren of all vegetation and there is no growing thing, except possibly a stubby growth of sedge grass, the hardiest of all the plants and the most resistant to smelter injury. If there were no smoke emitted from its stacks, and if there were no devastation immediately around the furnaces, the company would surely have shown these facts to the court by photographs as they have attempted to show by so many that there was no damage in Georgia.

These photographs are part of the numerous scientific exhibits introduced in the effort to overcome the testimony of so many living witnesses for the complainant, who daily see the injury and damage existing around them. Among the other exhibits of this nature were certain cores or "borings" taken from trees by Prof. Bain and his assistant. The defendant refers throughout its evidence to about sixty of these cores (Evidence, p. 926), but only two were introduced in evidence and an enlargement by photograph of one of these. (Evidence, pp. 845, 846.)

The purpose of these cores was to show the annual ring growths of the trees, and by these to determine in what years the growth was normal, in what years below normal and in what years above normal, and the defendant contends by this class of evidence that it demonstrates that the growth for the past several years has been normal or at least better than in many years preceding, and that therefore there can not have been injury to the trees.

They have also introduced certain portions of sections from the trunks of trees for the same purpose. (Evidence, p. 927.)

It is shown, by Dr. Hedgecock, Johnson and Clark, the employes of the bureau of forestry of the United States, that cores and portions of sections, do not constitute the best method for showing this annual growth as it is possible for a tree to grow more on one side than on another and for the rings not to be uniform all around the tree. Not only is this possible, but it is the rule. These witnesses show that the best method is to take an entire cross section of a tree where the entire growth and the entire annual ring can be observed, from this entire section to determine the annual growths, the growth checks and to say in what year or years the growth has been normal. (Evidence, pp. 444, 431-32-57.)

The state has pursued this method and has introduced a number of entire cross sections of the trunks of trees and these sections show that there is no uniformity of growth around the entire circumference of the tree and that the growth checks for the last few years have been in many cases severe, this condition being due to injury caused by smelter fumes. (Evidence, pp. 400-404), showing conclusively that the damage complained of by the State has not been eliminated and the nuisance not abated.

Prof. Bain, a botanist and entomologist was also introduced by the defendant (Evidence, p. 891), but his evidence is of no value to them for it is negative, as is that of every other of defendant's witnesses as to actual damage and he merely discusses scientifically and at great length the effect of fumes on trees, etc., introduces a number of photographs and shows that there are many sections of the country with much more dead timber in the forests than those of North Georgia. This sort of evidence is simply in the effort to becloud the real issue.

Prof. Bain admitted, however, that the leaves were the most

vital and important parts of the tree and that injury to them quickly made itself perceptible in the tree and that the leaves are the lungs, mouth, and stomach of the tree and take in and digest the food which builds it and necessarily where injury to them occurs, damage to the tree results, and he shows conclusively that application of sulphur dioxide is injurious to plant life. (Evidence, pp. 947-948-949-950.) And since sulphur dioxide is present in the air of Georgia, as shown by all the witnesses for the State, coming from the defendant's plant, as shown by Dr. Hedgecock and a vast number of other witnesses who have personally observed it, settling upon the trees and growing things, it necessarily follows that the defendant is injuring and damaging the State of Georgia at the present time.

The defendant has contended by a number of witnesses that the damage in North Georgia is principally caused by insects, but Prof. Bain testifies that he has "seen more damage by insects in other sections than here." (Evidence, p. 954.)

Along the line of scientific evidence, the defendant has attempted to show by hypothetical questions propounded to "experts" that the smoke rising from the stack of its plant of a given percentage of sulphur dioxide, this percentage being given by Lamoreaux, moving in a cone shape from the stack to the Georgia line widening as it came, of relative uniform width for its entire length, would be so diluted and difused by the time it reached Georgia, that it could not be injurious. (Evidence, pp. 824-25, 837-838.)

This evidence is set at nought by the testimony of the witnesses who swear that they have observed it on many occasions and that the smoke does not travel in the manner described in the hypothetical questions, and that the facts therein stated are not correct. (Evidence, pp. 8, 9, 17, 18.)

The answer to these questions are therefore valueless.

Dr. Hedgecock says, "I have seen it carry 25 miles, and when it got 25 miles away, it would strike the mountain," page 18.

The defendant has offered a vast amount of irrelevant evidence on the subject of damage existing prior to 1906, to which the attention of the court has been heretofore called.

The attention of the court is respectfully directed to the cross-examination by the defendant of the witnesses Will H. Shippen and Frank E. Shippen, introduced by the complainant. (Evidence, beginning pp. 405 and 501.) The defendant's counsel seemed to be endeavoring to develop evidence for use in a civil case then pending between the Shippens and others in the Georgia courts and such evidence is in no way relevant to this issue. A number of documents of great length were read into the record for no purpose whatever in this issue. If there was any purpose it seemed to be to show that the Shippens were interested personally in the outcome of the present issue, that they had caused the State of Georgia to begin and maintain this action, and that had it not been for them it would not have been begun. All such efforts are attacks upon the motive of the State of Georgia, and should not be considered by the court. The defendant consumed from pages 501 to 556 of the Evidence, in cross-examination of this nature.

Naturally the two Shippens are interested in this matter and being the owners of vast tracts of timber and land are as much or more interested than any other persons. But is this interest to be held against them, when their property is at stake? Should their interest be held against the integrity and honesty of the State of Georgia and her authorities in maintaining this action? Every citizen in the affected section of North Georgia is interested and it is not for the Shippens and not for any other individual or individuals that the State is proceeding, but for the protection of her rights as a sovereign and her sovereign ownership of the damaged territory, and for the protection of this great body of her citizens.

Any action at law or in equity, any trade pending between the Shippens and any other parties is, we submit clearly irrelevant to this issue.

It is virtually conceded by this defendant and is admitted by the Tennessee Copper Company in its contract with the State of Georgia and heretofore referred to, of file in this case, that there is damage being done in North Georgia. The Tennessee Company agrees in that contract to furnish a sum of money each year to be distributed by the State to its damaged citizens. But this distribution of funds is the least concession made by the Tennessee Company. It agrees to curtail its operations during certain months and above all agrees to allow a man appointed by the State to supervise its operations at its expense, to keep its books and plant open to him at all times and to allow the fullest examination by the State. The Ducktown Company does not do this but endeavors to hide its own actions behind the Tennessee Company and says that the damage is being done by that Company and not by it. It does not come out in a fair and open manner and say to the court "here are our records, examine them," but keeps them out of sight and allows no inkling of its true operations to creep into the record in this case. The presumption arises that the Tennessee Company is living up to its contract, because the State has not moved against it and allows a continuance of the contract, and it necessarily follows therefore, that the present defendant is the source of all damage now being done. Not only does this follow as a necessary conclusion, but as heretofore pointed out it is shown by a number of witnesses that during certain periods when the Tennessee Company was closed down, damage was done in North Georgia, and this smoke carrying the deadly fumes could only come from the plant of this defendant.

It is shown by the State that the zones of injury marked on a map by Patterson, Government Expert, filed in the original hearing in this case, have been increased since Mr. Patterson made such investigation and map, and that the two principal

zones have considerably widened and the extent of the injury is much greater than in 1906. (Evidence, pp. 366, 367, 326, 327-28, 443, 444.)

The map by Patterson is filed in this hearing as Exhibit A to the evidence of W. H. Shippen. (Evidence, p. 328.) The two zones which are here shown to have widened are the accute and chronic.

This evidence alone demonstrates that beyond question the conditions now existing in North Georgia are not improved as the defendant has undertaken to prove, but are considerably worse, and that the territory of Georgia affected by the fumes from the smelters is much larger in area than in 1906 when this Court held that Georgia was entitled to relief.

The defendant introduced a number of witnesses who testified that in the section of North Georgia claimed to be damaged by fumes, there were crops raised, which had never been equalled not only in that section but anywhere else in the state; prize acres of corn, marvelous yields of wheat and oats. And in cross examination of the witnesses for the State they endeavored to show that the very years during which they claim those extraordinary crops were raised, had been the driest ever heard of in that vicinity, so dry in fact that all of the damage done there was attributed to drought by the defendant. It would not be possible for bumper crops to be raised in various locations through the same section when the entire section was visited by unheard of drought; but it is not only possible but is the fact that good crops can be raised on one farm which is untouched by sulphurous gases while the next farm might be entirely blighted by the fumes.

One witness introduced by the defendant to show the magnificient yield of the land in North Georgia,—that same land they

claim in other parts of their evidence to be worthless,—was John Addington (Evidence, p. 878), a farmer of Fannin County who won the first prize at a local corn "show" for the largest yield per acre. He had planted one acre in prize corn and had devoted himself almost continuously and exclusively to this acre. He had forced his land, and lavished fertilizers upon it and had used the most improved methods of farming (Evidence, pp. 884-885), and had far surpassed the majority of farmers in his care and attention to that one acre, and the defendant relies upon this acre alone among the thousands and hundreds of thousands in North Georgia, to substantiate its claim that no damage is being done.

Addington testifies that his place has never been visited by the smelter "smoke" to any great extent, that it lies behind a ridge of hills which protects him and that he has never suffered greatly from it, not even in 1906 and 1907, but that he has seen his crops bitten to some extent by the fumes and in adjacent territory he has seen the forests where they have been visited and burned by the smelter smoke. (Evidence, pp. 880-881-882-887.)

Some of the witnesses on behalf of the defendant brought from Georgia are so eager to serve their employer that they swear positively that since the acid chambers were installed by the two defendants they have never seen smoke in Georgia to an appreciable extent. The Companies themselves do not contend this, for in the winter months they operate at full capacity and it is an admitted fact that when so operating their acid chambers cannot take care of all the fumes. The only exception made to this testimony of the witnesses just referred to is that there is occasionally smoke present when the Tennessee Company breaks down. (Evidence, 608.)

To illustrate the nature of the evidence given by the witnesses for the complainant, we quote from some of them as follows:

In speaking of the relative carrying power of the smoke from the plants of the two defendants, Dr. Hedgecock, on page 8 of the Evidence, says:

"Q. 40 Which would pass under and which would pass on top?

A. The Ducktown Company's smoke would pass below, the other on top.

Q. 41. Where would it strike the State of Georgia most?

A. It would strike lower down.

Q. 42. Where would it affect Georgia?

A. The effect would be greater the first few miles, affect it—

Q. 43. Affect it more or less than the Tennessee Copper Company?

A. It would affect it more on the first slopes.

Q. 44. What distance would that injury carry?

A. From my observation from the smoke columns I have seen, I would judge it would carry out six or eight or ten miles, depending on the conditions; it might go further."

Regarding injury which he saw, the same witness says, on page 9:

"Q. 61. On that trip did you observe any smoke injury, if so, at what point?

A. On that trip I observed smoke injury near Epworth, and extending at various points along the road from Epworth to Madola and beyond Madola at a number of points between there and Barnes Mountain, and on Barnes Mountain abundant injury, and I took the field glasses and looked at Mule Top and could see many trees browned on the slope of Mule Top Mountain. Returning from there to the Grannymar Mountain, I saw injury in several places."

"Q. 63. Was there much or little injury through that section?

A. Much injury in places, not uniform."

Further in speaking of this section, the same witness said, on page 16, in reply to question 101:

"I would attribute the greater part to the Ducktown plant and a minor part to the Copper Hill plant, until you get high up on the mountains, when you get on top of the mountains, it would be hard to say, on the high mountains."

H. L. Johnson, government forester, in speaking of a trip he made with Dr. Hedgecock and others in reference to smelter injury in the Madola and Barnes Mountain sections says on page 60:

"A. to Q. 20. Well, the foliage for several miles was so brown and red,—we passed one place where some scarlet oak had shed at least two thirds of the leaves, and the leaves covered the ground in the road under the trees."

E. B. Clark, another government forester, on page 315, says:

"Q. 113. Tell me one place where it has affected the underbrush?

A. All around Pierceville and Madola.

Q. 114. When did you notice that?

A. Last Friday and Saturday.

Q. 115 How many acres of underbrush where you noticed the underbrush was affected?

A. Hundreds of acres.

Q. 116. Did you get out and travel around and go on hundreds of acres to see it?

A. I walked through hundreds of acres."

The above questions and answers were on cross-examination. The same witness in speaking of the two volumes of smoke coming out of the two stacks of the defendants when standing on Barnes Mountain, stated on page 305:

"Q. 43. The stacks of both plants were visible?

A. Yes sir.

Q. 44. State whether or not you saw any smoke coming out of the plants?

A. Yes sir, large volumes.

Q. 45. What was the volume coming out of the Tennessee Copper Company's stack, as compared with the volume coming out of the other?

A. Both about the same."

J. H. Clonts, telling of the conditions in his neighborhood, east of Ellijay, in Gilmer County, on page 80, says: Answering Q. 11. "This smoke in there is what they call the Ducktown smoke. When the wind comes in from the north it comes towards us; comes rolling in

there like the woods was afire and comes in and drops in your fields, and when it comes over and drops in there you can smell it. After it comes in there, in a day or two you can see it on the leaves of the trees; dries up the leaves."

On page 82 the same witness in answer to Q. 50, says: "It has been in there more this year than it has been before; it seems like the wind comes from the north more, and when it does, it comes in there. I wouldn't say that it comes in every day; I think there were some of the days that it went back north."

On cross examination this same witness on page 85 says: "Q. 37. Wasn't the smoke worse in 1906, 1907 and 1908, just after that stack was constructed than any other time, for two or three years, than it has ever been?

A. No, I don't believe that. This year it has hurt us worse than any year."

C. S. Northcut on page 99 says in answer to question 21: "The first day I saw it, I was sitting on the porch at home. It come up the branch. I first thought the woods was on fire or some building on fire down below and when I come to notice it, it was the smoke that comes in there when the wind was from the north, and we had a north wind blowing that day."

On page 101, the same witness says answering Q. 55: "After the smoke come in there, the taters died down; just looked like a fire had been through them."

W. A. Painter, on page 107 in answer to Q. 15 says: "One year it was as bad as this year, but it was later in the season; that was about six years ago."

On page 109, in answer to Q. 36, the same witness says: "I have seen it rolling through there like a fog, but it wasn't a fog, for I know the smoke."

W. S. Henson, on page 116, answering Q. 20, says: "I can't tell you sir which was the worse. It has been in there every year, but it seems like it has been worse this year than before."

George Henson, on page 119, says:

Q. 35. "What effect does it have on peas, if you know?

A. I have quit planting peas.

Q. 36. Why?

A. It just killed the peas so bad that I quit.

Q. 37. Didn't have any success with them?

A. No sir.

Q. 38. How about oats, rye and wheat?

A. I ain't sowed any oats; I sowed some wheat, and my wheat this year, after that smoke come down in there, I told the boys——it just dried up and parched it.

Q. 40. What was the yield from that particular field that this smoke settled on?

A. How much did I make you mean?

Q. 41. Yes, how was the yield from that field?

A. I sowed fourteen bushels and I got thirty-one.

Q. 42. How many bushels could you get ordinarily?

A. I don't know exactly, I reckon about twenty bushels to the acre. I sowed about fourteen acres and I only got thirty-one bushels from the fourteen acres."

W. H. Shippen, in answer to Q. 22, on page 320, says: "It is very much changed, the timber don't have that healthy look. If you start at the furnaces at Ducktown you can take a zone there, practically everything is denuded, you can go a little further out and you will find timber showing the effects of these fumes. You go a little further and you find the timber not so much affected. Still further you will find the leaves brown, and further out you will find only certain species that are affected by the fumes, and when you get beyond that you will find only an occasional tree, and when you get back thirty or forty miles, you will often find only one or two species on the hillsides where the smoke gets to it. As you travel towards the mines conditions get worse and as you go away they get better. The forests are unhealthy and—sickly condition. If you cut into the tree you will find the growth has been decreased and if you interfere with the growth of a tree it will die."

On page 325, this witness in answer to question 63, says: "I have been out in Georgia in the woods quite a little of late, and from what I have seen around Ellijay, I have seen so many times—I have seen the smoke present this year more than I have ever known it before. I have never seen the smoke with us as often. It commenced in the early spring and has kept up all this summer. I have seen vegetation and seen beans and peas damaged and killed on my place there in a single night.

I have smelled the fumes in there the night before and the next morning they would all be crisped up and ruined, as if frost had bit it and damaged it. I will not raise one third of a crop."

In answer to Q. 68, on page 325, this witness says: "I have noticed the large rye fields right in front of my home. I live up on the mountain and this rye field is in the valley right in front of me. I saw the smoke settle in on it just about the time the rye was in bloom, I was sure then that the rye would be just about ruined. A short while ago the rye—. When cutting that rye I went there and examined it as they were putting it up. The heads were large but they were chaffy and didn't have three grains where there ought to have been twenty-five or thirty. I don't believe the man got his seed back. I am sure that rye crop was cut off four-fifths from what it would be if the smoke had not got in on it. The same was true in my rye that matured in the chicken runs. The straw grew up almost to my shoulders, stood away up, but it didn't have any rye to speak of at all. I particularly noticed the roasting ears at my place."

This same witness on page 337, speaking of how the smoke affects one section one year and another another, in answer to Q. 108, says:

"Why, in some sections of the country it has been better and in some sections it has been worse. If you could follow those fumes during the entire time you could see how that was. It does not damage Blue Ridge one year and the next year maybe it will, you don't know where it is going, and for that reason you cannot absolutely state just the conditions with respect to what it is today and what it was last year or the year before."

The same witness, on page 339, on cross examination, says:

"Q. 135. Are you going to swear that taken as a whole the conditions in North Georgia are just as bad since the acid is being extracted as before?

A. Well I have always sworn, I have sworn, that conditions at Ellijay, in Gilmer County, Georgia, where I now live, for smoke, has been with us more, oftener, and in greater quantities this year than ever before in my life."

F. E. Shippen, on page 395, gives a number of dates, on which days he testifies that the smoke from the defendant's smelter was present in the Ellijay valley in sufficient quantities to do serious damage. The witness gives at least fifty days on which this condition existed.

The same witness, on page 399, in answer to question 49, says: "Last year we had a great deal of smoke, but our injury this year was earlier than I ever saw it before. There was serious injury there in June."

In speaking of the conditions in the Tumbling Creek Section, this same witness, on page 403, in answer to Q. 101, says: "The conditions were bad, the white pine and hemlock timber, a great deal was dead, and a great deal had just recently died. I examined the trees to see whether or not there had been any fire through any of the woods."

In speaking of the damage on Barnes Mountain, and Grannymar Mountain, which points are from eight to ten miles due south of the defendant's smelter, this

same witness says in answer to Q. 89, on page 402: "Why, the oak timber was the principal timber on that mountain, I would say that there was dead and damaged timber which I don't think would put out again, from looking at it, I would think something like forty per cent of the oak timber on that mountain will never put out again. I saw it there at Mr. Barnes' house and went up from there. I cannot tell you how long we were on that mountain, but I know what time the photographs were taken."

Answering Q. 90 on the same page, he says as to the appearance of the leaves on the trees:

"They were very brown, some of them were hanging on and a great many were on the ground."

With reference to the same section of country, in answer to Q. 126, page 405, he says:

"Why, on certain oaks, what we call Spanish oaks, some call it scarlet oak, and black oak, thirty-five per cent of the timber was dead, badly damaged and dying. I saw no fire injury to this timber. We climber up the mountain and went up near to the top and then we went down and to another top and then over it and went over in the Tumbling Creek country, if I remember right, I have it down here, yes we went on Grannymar Knob and crossed it and went on down Tumbling Creek quite a ways."

Dr. G. W. Hedgecock, on page 443, in speaking of the injured zones as fixed by the government forester, Patterson, on his map which is exhibit A to W. H. Shippen's evidence, was asked the following question:

Q. 23. "From all your trips to this section I will ask you to state, and from your familiarity with the zones

as fixed by the forest service, I will ask you to state whether or not there has been any diminution or retardation or restriction rather of the zones since 1906 and 1907?

A. All the points I have visited was none, in fact in one direction there was an increase to the west.

Q. 24. And in other directions?

A. It is about the same so far as I can see from what was described, in this area."

On page 231, L. C. Allen, who is 78 years of age, and who shows himself to be a very intelligent man, says in answer to Q. 24:

"To give you an idea of it; I am down there, and it's over twelve miles on the direct line from my house to Copper Hill and I live right there near the river, and when the smoke comes in there it strikes me right square, and when the heavy smoke comes in there I am right in the face of it. I have seen it so thick through there that you couldn't tell a man from a woman four hundred yards away."

This same witness on the same page, in answer to Q. 19, says: "The first, second and third of July and the fourth of July and especially the second and third of July was the heaviest smoke I ever seen in there."

This witness lives in the Morganton neighborhood. (Evidence, p. 230.)

T. R. Harkins, on page 239, says on cross-examination, in answer to Q. 8:

"Last year was our worst year that we have had; that is to say in my country."

A. E. Sharp, in speaking of the conditions from eight to ten miles south of the defendant's smelter, on Fighting Town Creek, on page 140, says:

"Q. 95. Was there much or little smoke damage in there?

A. I saw a great deal of it."

"Q. 97. How many trees would you estimate you saw damaged in there on that trip?

A. That would be impossible to tell; there was some appreciable damage on nearly all of them. I will say the bigger half of them.

Q. 98. How many miles of territory in Fannin County, Georgia, did that cover?

A. It must have been something like, where we traveled, eight or ten miles north and south.

Q. 99. How much east and west?

A. I saw the smoke as far as I went; I would say from four to five miles."

In answer to Q. 107, on the same page, speaking of the conditions in that section, the witness said:

"In that section there it killed the potatoes, a great many of them. I think in that section it killed pretty much all of them, and then on the timber you can see the leaves have turned white and then brown like you would see about in other sections. Back east of Ellijay it is worse than back west."

On page 142 the same witness says in answer to Q. 128: "Yes sir; there are some localities where it is a great deal worse than in others; they have it worse some years than other years. It depends on the air currents. Sometimes we will have them from the same direction for a whole summer; then the smoke will go in some sections and settle down, and maybe right in the center you will find some not damaged."

On page 143, in answer to Q. 146, the same witness testifies: "It kills it. I have seen the cabbages killed, and the peas, it kills them every year; and potatoes, it kills them too. In all sections we will find that they can't raise any potatoes to amount to anything. We can't raise peas at all."

We have given these few extracts from the testimony of various witnesses introduced by the complainant as typical of the statements of all these farmers and timber men, who as before stated spend their daily lives among the conditions complained of. It would be useless to quote further as there are hundreds and hundreds of such statements by the various witnesses for the State, set out in full in the transcript of the evidence.

We respectfully submit that it is to such witnesses as these that the court should look in determining this issue, rather than to all the expert testimony, all the scientific opinions and experiments and all the photographs.

Except such as this latter, the only class of evidence introduced by the defendant is the testimony of some few negative witnesses, the vast majority of whom were members of "commissions," who visited the affected territory, as Prof. Bain and others did, in the fall of the year, the winter or early spring, before the plants were in full foliage and before the effect of the fumes could be noticed.

We suppose there are many men in North Georgia and in Fannin and Gilmer Counties, who could truthfully testify that there is not and never has been damage in their particular localities, as many of the defendant's witnesses do, but this is not proof of the fact that the injury exists, because there can be no argument on the proposition that the sulphur dioxide is not uniform in its descent to earth but skips over large sections, and in between descends and withers, blights and kills, and the witnesses introduced by the complainant point out to the court the vast sections that are "in between" the localities in which the defendant's witnesses say there is no damage.

It is a fact that on all the mountain ranges in the affected district, on the sides facing the plants of the defendants the damage is more uniform and almost the entire section of such sides is seriously injured and damaged. (Evidence, p. .)

The State submits that the defendant herein has assumed the burden of proof, as heretofore stated, and that they have signally failed to carry such burden. We submit that all of the evidence shows conclusively that conditions in Georgia have not only not improved but that they were worse during the summer of 1914 than ever before.

This being true, the State now asks that she be awarded the final decree of injunction which this court has held she was entitled to. She has acted towards the defendant with the greatest consideration and patience. She has delayed and delayed action which would be hurtful to the Company's interests. She has given it every opportunity to deal fairly with her and to abate the nuisance which is ruining the northern section of the State. But her patience has been exhausted; her delays have not been rewarded, her hopes and expectations, based upon the fair representations of the defendant have not been realized; the defendant has refused to treat with the State in the matter of an agreement; it has kept hidden its books and figures; it has dis-

regarded every right of the State and her citizens, and has continued its wrong doing to such an extent that at last the State can remain no longer silent, but comes in justice to herself and her citizens, and in defense of her sovereign ownership of her lands and prays this Honorable Court to grant her relief and to issue the final decree which will restore her to safety and her citizens to peace and happiness.

Respectfully submitted,

WARREN GRICE,

Solicitor.

J. A. DRAKE.

LAMAR HILL,

of Counsel.

[redacted]

[redacted]

No. 1, Original, In Equity

THE STATE OF GEORGIA, COMPLAINANT
HER ATTORNEY GENERAL,
vs.
THE TENNESSEE COPPER COMPANY AND
DUCKTOWN SULPHUR, COPPER
IRON COMPANY, LIMITED, DEFENDANTS

Supplemental Brief for Complainant on
the Motion to Enter Injunction Order

WARREN GRICE,
Solicitor for the State of Georgia
J. A. DRAKE,
Special Counsel

IN THE

Supreme Court of the United States.

OCTOBER TERM, 1914.

No. 1, Original.

THE STATE OF GEORGIA, ETC., COMPLAINANT,

vs.

THE TENNESSEE COPPER COMPANY, AND THE DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED, DEFENDANTS.

Motion to Complainant to Enter Injunction Decree Against the Defendant, the Ducktown Sulphur Copper and Iron Company, Limited.

Since examining the brief and argument filed on behalf of the Ducktown Sulphur, Copper and Iron Company, Limited, solicitors for the complainant desire to call the Court's attention to certain statements and inferences therein which are not borne out by the record; and also to reply to certain positions taken by them.

We first respectfully direct the Court's attention to certain statements on pages 4 and 5 of our adversaries' brief, relating to the stipulation entered into between complainant and the defendant, the Tennessee Copper Company. This stipulation in full appears already as a part of the record in the original cause, being embraced in the motion for leave to file agreement and stipulation

made by the solicitor for complainant and the solicitor for the Tennessee Copper Company. The reason the State of Georgia is not now asking for a decree to be entered against the Tennessee Copper Company is because of the stipulation into which it entered with the last-named defendant. It is true that under it, the Tennessee Copper Company binds itself to pay certain damages, if found to exist, to the amount of $16,500 per annum, but this is but an incident of the stipulation and by far its lesser ingredient. The main thing is that the Tennessee Company agrees, in Par. 2 thereof, that from April 10th to October 1st of each year, during the life of the agreement, it will not operate more green ore furnaces than it finds necessary to permit of operating its sulphuric acid plant at its normal full capacity. See page 3 of that part of the record submitted on the first day of the October term, 1913.

From April 10th to October 1st is the growing season.

In the testimony recently taken, page 702, a witness of the Ducktown defendant company testified that the Tennessee Copper Company on June 8th and 9th were operating only two green ore furnaces, and this substantiates the complainant's theory that the Tennessee Copper Company is not doing the damage in North Georgia, because it is proven, as already shown, that the Tennessee Copper Company's acid chambers are 1200-ton daily capacity, and are abundantly able to take care of the fumes from two green ore furnaces, otherwise the defendant, the Ducktown Copper Company, is taking care of a much smaller per cent of its fumes than the Tennessee Copper Company, because,

according to their own showing, they can take care of only 130 to 135 tons per day, while they operate one furnace.

But we mainly wish to call the attention of the Court just here to other things in this stipulation, which show that the State in good faith was doing all it could to permit these companies to operate without calling on this Court for its injunctive decree. The brief of opposing counsel, on page 4, recites a portion of the resolution adopted by the General Assembly of Georgia, by which the Governor was authorized and directed to enter into an agreement or stipulation with the Ducktown Sulphur, Copper and Iron Company, Limited, for the same length of time and under the same terms, conditions and limitations as those contained in the agreement with the Tennessee Company, except that the Ducktown Company would only be required to pay as a maximum the sum of $8,500 annually as damages, to be distributed under like terms and conditions, provided damage was shown.

Under this contract an inspector was provided for. The company obligated itself to give information whenever called on by the Governor, a board of arbitration was provided for, and it was not made obligatory upon any citizen to submit his claim to arbitration. Complainant believed that the Tennessee Company had by its equipment then recently installed put itself in position to take care of practically all of these acid fumes, but it was contemplated that in spite of such arrangements small damages from it might arise, and provision was also made for pay for these. This contract, however,

was for a limited time only. The agreement was that if the company did not breach this contract that the State would not apply for an injunction or other relief against the Tennessee Copper Company within three years from October 1, 1913.

Defendants' counsel, in dealing with the evidence of Dr. Hedgecock, on page 41 of their brief, state that he is only a plant pathologist employed by the United States Government, and that he only made flying trips through North Georgia in an automobile, and, on page 42 of their brief, they charge that he shows that he is a prejudiced and an unfair witness. We respectfully submit that the records cited do not sustain any such contention, but, on the other hand, show that he is a most thorough and competent man in his line, and that he is not only a plant pathologist and made plant life a study for the last twenty or twenty-five years, but for the last three years, under the direction of the Government, has made a special study of sulphur dioxide fumes on plant life, and at the instance of the Government visited all the principal copper-producing plants in the United States, not for the purpose of studying the plants and methods of smelting ores, but to make a study of the smelter injuries on forests and growing vegetation, and he qualifies, under the most rigid rules of evidence, as an expert on smelter injury; and through all of his evidence, as cited by defendant's counsel, shows that there is abundant and notorious smelter injury through all the northern section of Fannin County, Georgia, and other counties visited by him, not only in the year 1914, just previous to the taking of the evidence in this investiga-

tion, but before this inquiry was up in 1913, at the instance of the Government he went there and inspected this affected region and testified as to the conditions that then prevailed and which were similar to those that obtained in 1914.

Defendants' counsel, in taking the evidence, gave a great deal of space to the cross-examination of the Shippen Brothers, in an effort to show that they instigated the original suit in this case, and have been responsible for the carrying on of it since by the State. Since seeing defendants' counsel's brief, we find that they are still devoting much space to this matter. We submitted in our original brief that all this cross-examination, wherein more than fifty pages were taken up in the introduction of correspondence between Shippen and certain companies relative to the sale of Shippen Brothers' stock, was incompetent, yet defendants' counsel still are insisting upon this class of evidence. We still respectfully submit that all such evidence is incompetent, but if it could be considered at all the papers read into the record on cross-examination by defendants' counsel show that the Shippen Brothers were not responsible for this litigation, but, on the contrary, both the Shippens state most positively that they were only one in thousands of citizens in North Georgia who were making complaints. The statement is made in defendants' brief (see p. 110), that the State has been imposed on in prosecuting this action, and that it has been used to promote private and selfish interests of individuals; and the inference is that the Shippens control the Governor and the General Assembly of Georgia.

The testimony in the record is to the contrary. The record shows that these two Shippens were, when they moved to Georgia some years ago, experienced timber men. They do own large quantities of timber in the affected districts, and they are naturally in sympathy with the movement to stop the depredations thereon.

The charge is made by defendants' counsel, on page 113 of their brief, that W. H. Shippen caused Shippen Brothers Lumber Company, in 1908, immediately after the original decree in this case, to be called together and sell to the Tennessee Copper Company a perpetual easement over the Shippen Brothers Lumber Company's lands in North Georgia, which amounted to something like 100,000 acres, for a consideration of $50,000. This charge is not only not sustained by the evidence as cited by defendants' counsel, but, on the other hand, said evidence shows that W. H. Shippen protested against this settlement, and would have nothing to do with it, advised against it, and when he saw he was outvoted by the other directors, he got up and left the room mad, and would have nothing whatever to do with such settlement. All that the correspondence referred to by defendants' counsel, on pages 13, 14, and 15, of their brief, proves is that the Shippen Brothers were trying to protect themselves against damage which was being done to their timber interests, and such damage was recognized by the Tennessee Copper Company, else they would never have paid the sums of money they did for these easements. Page 333, Complainant's evidence; page 520. This last citation shows that this witness, whom our adversaries would have this Court believe was

in league with the Tennessee Copper Company, vigorously opposed the Shippen Brothers Lumber Company's entering into this settelment with the Tennessee Copper Company, and vigorously opposed granting them an easement to emit smoke and fumes over their timber. The language of the witness is:

> ". . . I did everything in my power, as I testified heretofore, to prevent my company from executing that contract with the Tennessee Copper Company at the figure at which it was executed. We had a perfect row in our meeting there. I insisted that we not make any settlement with them at all, that we grant an easement in that property at no figure less than $100,000, which should be named for the damage at that time, but they thought differently, and after I left them and came back into the meeting they had suggested the figure of $25,000 for the damages, and I insisted on their raising that figure and finally got them to raise it to $50,000."

Opposing counsel, on page 117 of their brief, use this language:

> "It is also worthy of note that this same Professor McCandless recently testified herein that there were no damages of consequence resulting from the operations of the Ducktown Company since its acid plant was installed."

McCandless testifies to no such thing. Their citation to support the statement in the brief is to the evidence, Vol. I, pages 385 and 389. The reference is in-

accurate. However, no such deduction can be made from this witness's testimony anywhere in the record. His testimony will be found on page 836. Here is a man whom they highly compliment in their brief. They put him on the stand. It is shown that he was familiar with conditions at the time this suit was instituted and nowhere did they ask him, when they put him on the stand, his opinion as to how conditions of today in North Georgia compare with those of 1906 and 1907. He has not been State chemist for several years. Recently it appears he has been doing work for the Ducktown Company. On page 836 opposing counsel asked Dr. McCandless as to changed conditions in Fannin County, Georgia, and he answered there was a marked improvement in the conditions, and he observed this on a visit in April, 1908. This is the only place Dr. McCandless states that the conditions have improved, and this the opposing counsel quote from Dr. McCandless as evidence for the defendant, the Ducktown Copper Company. Opposing counsel use this statement of Dr. McCandless to try to impress the Court that conditions are improved in North Georgia since the installation of the acid chambers, when the facts are, as proven by the defendant, that there were no acid chambers in operation by either company at the time Dr. McCandless speaks of improved conditions in April, 1908. The facts are, as shown by Mr. Lamoreaux, that the Tennessee Copper Company started its acid plant in September, 1908, but he says the same was not a success (Rec., p. 802), and that the Ducktown Company, the defendant in this investigation, started their acid plant

in the spring of 1909 (Rec., p. 808). So, at the time Dr McCandless speaks of the improved conditions, neither company claimed to be taking care of any of the fumes, and conditions were identical with those obtaining at the time of the original decree in this cause.

In one place it appears on the surface that Dr. McCandless did say that it is impossible for the smoke or fumes of the Ducktown Company to do any damage in Georgia, but when the Court reads his evidence it will be noted that he makes that statement in response to a hypothetical question, wherein it is assumed that the smoke fumes from the Ducktown chinneys as soon as they are emitted take a cone shape, with the apex pointing toward the top of the stack and resting upon the stack, and that as the cloud of smoke moves toward Georgia it widens so that the mouth of the cone would be five miles wide by the time it reached Georgia. On this assumption, Dr. McCandless answered that the fumes be so diluted that it would be impossible for them to do damage. The trouble about this question and this answer is that the smoke does not come out in a cone shape, nor does it assume a cone shape, but the testimony is directly to the contrary. All the witnesses who testified at all on this subject agree to our statement as to this. The other side did not put up a witness to prove that the smoke took a cone shape, with the mouth of the cone gradually widening. On the contrary, the proof is all one way as to this, to wit, that the particles of the smoke seem to have an affinity one for the other, just like all other smoke, and that it travels in a solid mass until it comes in contact with sides of the

mountains or some other object, which causes it to break up.

On pages 17, 18, and 19, of the brief filed by the other side, they refer to statements in the form of brief filed on behalf of this complainant, wherein the Tennessee Copper Company are referred to as the "chief offender." In the beginning it was probably correct to characterize the Tennessee Copper Company as the "chief offender." That, however, was done in an argument presented to this Court in 1905—ten years ago. This record shows that this is not true now, for, as we pointed out in our main brief, in May, 1913, when the Tennessee Copper Company was closed down and not melting any ores of any kind, and the Ducktown Company was in operation, there were great quantities of sulphur smoke in North Georgia, and immediate, visible injury following such visitations of smoke. This could not possibly be attributed to the Tennessee Copper Company. This fact was established by six witnesses, as pointed out on page 20 of complainant's original brief in this investigation. Further, in July, 1914, on the 1st, 2d, 3d, and 4th days of July, at which time it was proved that the Tennessee Copper Company was closed down and that the Ducktown Copper Company was in operation, there were great quantities of smoke in North Georgia, at some places more than had been seen in years, and it was so strong that it would be smelted; and immediately thereafter there was smelter injury visible upon the forest garden and farm products. This fact was established by twelve witnesses (pp. 20 and 21 complainant's brief).

Our proof was abundant that the damage is now being

done by the Ducktown Sulphur, Copper and Iron Company. And, further, in substantiation of this contention, we call the Court's attention to the evidence of Dr. Hedgecock, on pages 8 and 17 of complainant's evidence. On page 17, Dr. Hedgecock makes the following statement:

> "From my observations last year that I made of the smoke columns from the two smelters, I observed the height and direction of the two columns, the direction which they were going, and as to how each struck the hills, and I noticed that the Ducktown column usually struck the hills at a lower altitude than the one from the other plant."

On page 8, Dr. Hedgecock says, in speaking of the Ducktown smoke's carrying qualities:

> "From my observations from the smoke columns I have seen I would judge it would carry out six or eight or ten miles, depending on conditions, it might go further."

In answer to a question as to how far the injurious effects of the Ducktown smoke would be observed in Georgia, he says:

> "It would pass out within a radius of from 6 to 15 miles from Ducktown" (Rec., p. 7).

A further significant fact, we would respectfully call the Court's attention to, is this: After the State of Georgia had completed its evidence, the defendant came before this Court, and asked permission to take rebuttal evidence, after the time for taking evidence as originally fixed by the Court had closed, and in the mo-

tion to take rebuttal evidence one of the main grounds set up was the fact that they were taken by surprise, by this identical proof that the State had proven damages in May, 1913, and July, 1914, when the Tennessee Copper Company was closed down; yet, when they came to take their rebuttal evidence, they failed to put up a single witness from North Georgia or elsewhere who would state that there was no smoke in Georgia on July 1, 2, 3, and 4, 1914, and in May, 1913, on which dates the complainant proved smoke and damage in Georgia.

It is a fair statement to make that the defendant, against whom we are now proceeding, charges that the Shippens are solely responsible for this suit, and that the Shippens are seeking to protect the Tennessee Copper Company, and that the two are endeavoring, through the State, to put all the blame on the Ducktown Company, whereas the Ducktown people say that the Tennessee Company is responsible for the present damage. If this were true, it is indeed remarkable. Complainant only called one witness from the camp of the Tennessee Copper Company, to wit, Mr. Panhorst, and used him for the sole purpose of showing that on certain dates the Tennessee Copper Company plant was closed down. We necessarily had to go to one of their employees to get this fact. When we had proven it by this witness, we turned him over to the other side, and they gave him a lengthy cross-examination, which was in the way of an examination in chief, and he made them a valuable witness, testifying, in effect, that he had traveled extensively in North Georgia and had not seen any smelter injury.

If this Court will bear in mind one well-known fact, which is undisputed in this record—a fact to which many witnesses testified on both sides—all, or nearly all, of this entire testimony can be harmonized. That great fact is this: That the effects of these sulphur fumes are not uniform, and that they do not go in a uniform course; there are many things that cause them to change their course and direction—the intervention of a hill will deflect them as will the change of air currents in the mountains. It is shown they will settle in one cove, or a part of one cove, and blight and wither one field of corn, and another field within a hundred yards of it will not be affected at all. It will skip over another farm and do no injury, and the next adjacent farm may be damaged seriously. It may then rise and travel eight or ten miles and do no damage, and settle in a cove at that distance and do serious harm; that the conformation of the hills and the mountains has a great deal to do with the injury. For instance, east of these plants it has never been known to injure anything for more than three or four miles, on account of a high range of mountains. To the west, except for one break, and to the northwest it is almost the same way; and to the southwest, after going six to seven miles, there is no damage, because the Blue Ridge Mountain comes across and the smoke, if it crosses it, goes so far before it settles again that it is diffused until it does no harm; but, going to the south and southeast from these plants there is a break and gaps in the mountain, and up the Toccoa River into Georgia there is a break in the mountains, and the smoke, as is proved by all the evidence, follows these depressions and

the air currents follow these depressions in the mountains and these are the causes, as given by the experts, of these conditions as to injury.

The testimony that this injury has occurred and is now occurring, and that it happens in many places, and that the damage is great and continuing and directly traceable to the Ducktown Copper, Sulphur and Iron Company is proved by a host of witnesses who own timber and farms in North Georgia within the zone affected, and it is also established abundantly and directly by the impartial and thoroughly competent witnesses Hedgecock, Clarke and Johnson, Government experts whom, although they are assailed in the brief of our adversaries, will, we feel confident, be considered by this or any other court as men of character and intelligence.

All of which is respectfully submitted.

WARREN GRICE,
Solicitor for Complainant.

J. A. DRAKE,
Special Counsel.

In the Supreme Court of the United States

OCTOBER TERM, 1914.

THE STATE OF GEORGIA, PLAINTIFF,

vs.

THE TENNESSEE COPPER COMPANY

and

THE DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, LIMITED, DEFENDANTS.

IN EQUITY.

BRIEF AND ARGUMENT ON BEHALF OF THE DEFENDANT, DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED, ON MOTION FOR FINAL DECREE.

W. B. MILLER,

J. A. FOWLER,

Solicitors for Defendant,

Ducktown S. C. & I. Co.

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In the Supreme Court of the United States

OCTOBER TERM, 1914.

NO. 1—ORIGINAL.

THE STATE OF GEORGIA, PLAINTIFF,

vs.

THE TENNESSEE COPPER COMPANY

and

THE DUCKTOWN SULPHUR, COPPER & IRON CO., LIMITED, DEFENDANTS.

Brief and argument on behalf of the defendant, Ducktown Sulphur, Copper & Iron Company, Limited, on motion for final decree.

GENERAL STATEMENT.

This case was originally heard on affidavits on February 25th and 26th, 1907, and an opinion was handed down on May 13, 1907, wherein the Court found in the most general terms, that defendants were committing a public nuisance in the State of Georgia, by emitting from their furnaces used in smelting ores noxious fumes and gases, but in order to allow a reasonable time to the defendants to complete the efforts they were

making to stop the fumes, the Court postponed the entrance of a final decree till the October Term, 1907. At that term the following entry was made:

> "Mr. John C. Hart, of counsel for the complainant, submitted to the consideration of the Court a motion to postpone the entry of the final decree in this case.
>
> "October 21, 1907.
>
> "On consideration of the motion to postpone the entry of final decree in this cause, it is now here ordered by the Court that the time to present the form of the final decree to be entered herein, be, and the same is hereby, enlarged as counsel may be advised, without prejudice, and on due notice.
>
> "October 28, 1907."

On August 13, 1913, the legislature of the State of Georgia passed a resolution, wherein after reciting an agreement between the State of Georgia and the Tennessee Copper Company, it was provided: "that the Governor be and he is hereby authorized and directed to enter into an agreement or stipulation with the Ducktown Sulphur, Copper & Iron Company (Limited), for the same length of time and under the same terms, conditions and limitations as are mentioned and provided by said contract with the Tennessee Copper Company, and with the exception that, the amount to be deposited by the said Ducktown Copper & Iron Company (Limited) for the arbitration of claims, shall be the annual sum of eight thousand five hundred ($8,500) dollars, to be deposited and distributed under the same terms and conditions and with the same provisions and limitations as are provided in said contract with the Tennessee Copper Company, as set out in said above mentioned resolution.

"*Be it further resolved,* That in the event the said Ducktown Sulphur, Copper & Iron Company (Limited) shall fail, refuse or decline to enter into such contract with the State of Georgia, and to deposit said fund annually as above set out, the Governor is authorized

and directed to make prompt application for final decree of injunction against said defendant, Ducktown Sulphur, Copper & Iron Company (Limited) in said cause in the United States Supreme Court."

The defendant Ducktown Company, believing that if it ever had committed, or in any way had participated in the commission of a nuisance in the State of Georgia, it had long since ceased to do so, and that for at least the previous five years it had been strictly complying with the law, refused to enter into the agreement proposed by the State of Georgia, but did propose to the Governor and the Attorney General of the State that the matter be submitted to a body of scientists authorized to investigate and report as to whether or not its operations were doing any substantial injury within the State of Georgia, the expense of the Commission and of the inquiry to be borne by this defendant; but those officials regarded the resolution of the Legislature as mandatory, leaving them no discretion in the matter; and at the last term of this Court the Attorney General entered a motion for a decree awarding a perpetual injunction against this defendant, which motion was resisted; and after a hearing, on the 13th day of April, 1914, the Court entered the following order:

> "On consideration of the motion of counsel for the complainant to enter a final decree against the defendant, The Ducktown Sulphur, Copper & Iron Company, Limited, and of the argument of counsel thereupon had, as well in support of as against the same.
>
> 1. It is now here ordered that the further consideration of said motion be and the same is hereby postponed until the next term.
>
> 2. It is further ordered by the Court that leave be and the same is hereby granted to the said defendant to take additional testimony by depositions (or by affidavits, if the parties consent thereto) to be taken before any officer in the State of Georgia or Tennessee authorized to take depositions by the

laws of said states upon ten days' notice to the counsel for the complainant, said additional testimony so to be taken to relate solely to the changed condition, if any, which may have arisen since the case was here decided, said testimony to be concluded on or before the first day of July, 1914.

3. It is further ordered that the complainant may take additional testimony in the same manner, such testimony to be concluded on or before the first day of September, 1914, and all of said testimony both for said defendant and said complainant to be filed with the Clerk of this Court on or before September 15th, 1914.

April 13th, 1914."

Much testimony was taken by both plaintiff and defendant within the time specified; and subsequently, evidence in rebuttal was taken by defendant, permission to do so having first been obtained from the Court.

BRIEF AND ARGUMENT.

I.

Since May 13th, 1907, the defendant Company has made every effort to improve its plant so as to prevent the emission of sulphur fumes, and at an expense of more than $600,000.00 it has installed an acid plant, which extracts from the smoke a very large per cent of its poisonous element (Sulphur dioxide) and converts it into sulphuric acid, and the amount of fumes now permitted to escape is wholly insufficient to cause any appreciable damages to the forests or any other vegetable growth in the State of Georgia.

The evidence upon this subject is as follows:

W. F. LAMOREAUX is assistant to the general manager of the Ducktown Company and has been connected with it since April, 1905. He says the acid plant was put into operation on June 11th, 1909. Prior to that time there was an experimental acid plant constructed at a cost of more than $40,000.00, but this was abandoned in favor of the chamber process, the one finally

adopted (Vol. 2, pp. 795-6). The cost of the present plant up to the time it was put into operation was approximately $600,000.00. The plant has been operated ever since its construction with the exception of a few occasions when repairs were made to the furnace. This plant was installed in an effort to conform to the ruling of this Court. Many years have been spent and many thousands of dollars with the idea of utilizing the sulphuric acid in the air aside from the question of injury from the smoke. When the threatened injunction was held over the company they made very strenuous efforts to utilize the best scientific knowledge with the idea of entirely eliminating the nuisance, and the acid plant was constructed more for that purpose than with a commercial view, it being doubtful whether it would be of any commercial value. In fact, after consultation with engineers they believed no profit would be realized from its operation. The plant was designed and its construction undertaken by L. N. Haynes, of LaSalle, Ill., who bears the reputation of being one of the leading sulphur manufacturers along scientific lines in the United States. He was then employed in Germany in the sulphuric acid business. From the time the plant has been put in operation it has been a complete success (Vol. 2, pp. 797-8).

For illustration the witness states the amount of sulphur in the ore consumed during the year 1913, and what became of the same, as follows:

There was contained in the ores treated 29,783.19 tons of sulphur. Of that sulphur content 1387.72 tons remained in the matt; 12,408.42 tons were converted into sulphuric acid; 2,536.3 tons remained in the slag; 348.7 tons was contained in the flue dust, the sum total accounted for being 16,680.64 tons or 56%, leaving 13,002.55 tons not specifically accounted for (Vol. 2, p. 813). No allowance is here given for a great amount of smoke around the furnace, the amount taken up in acid compounds, contents in the shape of flowers of sulphur and some which escapes as gas hydrates and other harmless compounds (Vol. 2, p. 818).

Therefore, while in 1907 none of this sulphur was converted into sulphuric acid, during the year 1913 there were 12,408.42 tons, or 41½% of all the sulphur contained in the ores thus eliminated from the smoke, which represents the improvement in method of manufacture in 1913 over that pursued in 1907. Before the installation of the acid plant about 85½% of the sulphur escaped into the air, and if it be conceded that this high per cent was the cause of some damage to forests and crops in Georgia, yet certainly, when this is reduced *41½% of the whole, or about one-half* of that remaining, it is rendered harmless by diffusion, long before it reaches the Georgia line.

Furthermore, a very much less quantity of ore is smelted by the Ducktown Company during the growing season. For illustration, in June, July and August, 1913, there was produced 2,572,462 pounds of matt while in October, November and December of the same year there were 3,432,540 pounds produced, or a difference of 860,078 pounds (Vol. 2, p. 817).

The general manager has given instructions ever since the building of the acid plant that the furnace production be curtailed during the growing season of the year, that is from May until September (Vol. 2, p. 818), the prime reason of doing so being to comply with their promises and obligations to the State of Georgia (Vol. 2, p. 819).

W. M. BOWRON, who was educated at Edinburgh, and was once chief assistant to George Lunge, Professor of the University of Zurich and the accepted text book writer on production of sulphuric acid, testifies that he was selected by Joseph Brown, Governor of Georgia, to examine the Ducktown Basin and report upon the conditions there (Vol. 2, p. 770). His visit to the Ducktown plant was not announced beforehand, but he found but one furnace in operation and the acid plant was able to take care of all the fumes emitted (Vol. 2, p. 772). Subsequently he made other visits in that section for the Ducktown Company. He took with him a

chemical apparatus and applied tests which would show up to one forty thousandth of one per cent. He tested going farther from the Isabella plant until there was no indication of sulphur fumes at all. Two sets of tests were made, one when the wind was blowing Northward, away from Georgia, and the other when it was blowing towards Georgia. The distance sulphur fumes could be detected away from Isabella plant in the direction of Georgia is indicated on map filed as Ex. No. "1" to his deposition, by red lines, and the distance it could be detected when the wind was blowing towards Georgia is indicated by the yellow lines. At the points represented by the two lines no gases could be detected (Vol. 2, pp. 773-4), *and he found no evidence of sulphur fumes at any point greater than one-half mile from the furnace towards the Georgia line* (Vol. 2, p. 787). He thinks that the gas which escapes from the furnace is absolutely negligible (Vol. 2, p. 792).

PETER S. GILCHRIST is fifty-one years of age, and his profession is building acid plants and plants to take care of noxious vapors, and he is familiar with the law of diffusion of gases (Vol. 2, pp. 821-2).

DR. J. M. McCANDLESS, of Atlanta, *was for ten years chemist for the State of Georgia* (Vol. 2, p. 835).

In September, 1913, at the instance of the Ducktown Company, Mr. Gilchrist and Dr. McCandless visited its plant together (Vol. 2, pp. 821-3). Mr. Renwick, the Superintendent, told them to examine the plant and report the facts, and they did so. Mr. Gilchrist says he found the acid plant working as fine as any plant he ever saw. There was only a mere trace of sulphur escaping, and it was practically all going through the condensing chambers. Mr. Renwick opened his books, and they took the amount of ores smelted every day for the preceding three months and the analysis of same, and they calculated the amount of sulphur that was charged into the furnace. They then took the amount of sulphuric acid produced, the amount of sulphur left in the matt and in the slag and flue dust, and estimated

that the remainder passed away as sulphur dioxide. In that way they found that the company was recovering about seventy-five or eighty-five per cent of the sulphur, and some twenty-two or twenty-three per cent was lost. There was a total of thirty-two thousand pounds of sulphur, making a liberal calculation, equivalent to sixty-four thousand pounds of sulphur dioxide, liberated into the air daily. They then estimated that the wind would always come from the North, which was unfair to the company, and blow all of that sulphur dioxide towards the South, and they calculated that the diffiusion would be such before it would reach the State of Georgia that the combination of sulphur dioxide with the air would be in the proportion of one part to three and one-half millions. This calculation assumed that the entire amount that escaped would be transmitted into Georgia, and took no account whatever of what would be absorbed by streams, soil and trees or anything that would deflect it upward into the air, though naturally the greater part of it would most likely be diffused and carried upward and laterally into other territory (Peter Gilchrist, Vol. 2, pp. 823-4; Dr. McCandless, Vol. 2, pp. 837-8).

The discrepancy between Mr. Lamoreaux's figures and those of these witnesses as to the amount of sulphur unaccounted for is due to the fact that their estimates were based on figures for summer months, while Mr. Lamoreaux's extends over the entire year (Vol. 2, pp. 831-2).

Mr. Gilchrist says that in Chattanooga there is nearly precisely the same amount of sulphur fumes discharged into the air from the burning of soft coal, and he has been in Chattanooga many times when he could find traces of it (Vol. 2, pp. 823-4); that the relative sulphur dioxide content in the atmosphere in cities like Cincinnati, Cleveland, Columbus, Chicago or Atlanta is very similar to the amount of sulphur dioxide found in the atmosphere around the Ducktown plant; and that in London, England, it has been ascertained by Govern-

ment experts that for each square mile in the city, in the summer there are eighteen tons of sulphur in the coal consumed, and in the winter forty-one tons, and the sulphur dioxide produced therefrom is twice that amount. He does not think that as much sulphur dioxide proportionately reaches the State of Georgia from the Ducktown plant as there is in Cleveland, Chicago, and other cities of that character (Vol. 2, pp. 832-4). And he thinks if all the fumes escaping from the stack were to go in the direction of Georgia they would exert no effect on vegetation, because they would be diluted to such an extent that they could do no damage (Vol. 2, pp. 832).

Dr. McCandless says he is familiar with the effect of sulphur dioxide on vegetation, and has made a study of the section of the country around the furnaces, and he thinks it is absolutely impossible for the operations of the Ducktown plant to have any harmful effect on the forests and gardens in Fannin County, Georgia. They stayed over night, and left the window of the room in which they were sleeping open, and though the wind was blowing in their direction and they were but a half mile away from the furnace, they were not bothered with fumes.

II.

The condition of the crops, forests and gardens in North Georgia has vastly improved over what they were in 1907, and but little or no damage is now being done by smoke escaping from the furnaces of both the defendant and the Tennessee Copper Company.

The evidence shows that the Tennessee Company has also constructed an acid plant which went into operation in 1908. The relative capacities of the two furnaces and efficiency of their acid plants will be hereafter considered. The evidence leaves no room for doubt that as a result of these improvements conditions in North Georgia have vastly improved. But plaintiff attempts to show that notwithstanding these improvements the injuries are yet so extensive that the law as heretofore

declared in this case is being violated, and the most controverted question of fact in the case is whether or not any material damage has been produced in the State of Georgia by fumes escaping from the furnaces within the last three years; to-wit: 1912, 1913 and 1914. Defendant insists that, inasmuch as it is not disputed that the plants have been improved, and that as it is conclusively shown that conditions of the forests and vegetation in general are much better than when the case was decided in 1907, the burden is upon the plaintiff to show that this defendant is violating the law.

In order that the defendant be not prejudiced by the conflict of evidence upon this subject, *it must be kept in mind that the testimony relates to all damages resulting from escaping fumes, there being no effort, except to the very slight extent hereinafter mentioned, to show specifically that the injury claimed was produced by fumes escaping from defendant's furnaces.*

The length of the brief upon this subject it is believed is excusable because it is impossible to form any correct conception as to the weight of the evidence without making brief reference to the substance of the testimony of many of the witnesses.

A number of maps are on file as exhibits to the evidence of different witnesses, but by agreement have not been reproduced. Among them is a map of the Government survey of that section of North Georgia with reference to which special complaint is made, and of that part of Tennessee which immediately surrounds the furnaces, photographed and magnified to twice the original size by the witness J. E. Thompson, and upon it is traced the tour made by Mr. Thompson when taking one hundred and forty-two color photographs. For the convenience of the Court a duplicate for each member has been reproduced, and there has also been traced thereon from the evidence tours made by other witnesses for both plaintiff and defendant. It is suggested that consultation of this map in connection with the evidence upon this subject will be helpful.

1st. The evidence upon this question introduced in chief by defendant:

(1) *The condition of forests, crops and gardens in North Georgia as described by those who have traveled through and observed a considerable section of one or more counties.*

W. F. NAUGHAN. Witness went with a party through Fannin and Gilmer Counties and a part of Pickens, for the purpose of ascertaining what the damage was to the timber and vegetation. In 1913 he was out about twenty days on one trip and other times a day or two. (Vol. 1, p. 564).

In the section lying immediately adjacent to the Ducktown Basin they found the crops and vegetation in advance of anything he expected, in fact he didn't see any smoke damage at all. They went out especially to ascertain if damage had been done to Mr. Vestal, but went over various other lands near the Basin. In 1912 the apple crop was the finest he almost ever saw, but it wasn't so good in 1913. The trees were not full, but he doesn't know whether it was the frost that killed the crop or not, but there were late frosts in the spring of 1913. Corn and other grain crops were in splendid condition (Vol. 1, pp. 564-5).

J. M. SENTER. In 1912 and '13 witness at the instance of the Ducktown Company spent about eight days on one trip and probably five or six on another in traveling out towards Ellijay, Jacks River, Cow Pen Mountains and Blue Ridge and through the section that lies immediately South of the Tennessee line. The trips were made in September or October. He didn't see anything wrong with the crops and gardens, and the grain, apple and other fruit crops were good. He knows how smoke affects timber, but he detected no damage of that character. He found the crops and timber in good condition, better than they were before the acid plants of the two companies were put in operation in 1908 and 1909. The crops and fruit he saw in 1912 and

'13 were about the same as he saw in sections hundreds of miles away from Ducktown (Vol. 1, pp. 577-9).

A man by the name of Winthrop pointed out some damages in his orchard, and the witness went over it with him, and it was found that the tree was being killed by black bark and borer worm and not by smoke (Vol. 1, p. 582).

G. C. PARKS. Witness spent eight days in 1912 in the North Georgia territory that lies immediately South of the Ducktown Basin looking for smoke injuries, and in 1913 probably three or four days. He was a member of the party that camped on Jacks River. He doesn't think any damage was being done at that time. They had very fine fruit close to the furnaces; and they secured vegetables for use on Jacks River (Vol. 1, p. 590).

SHERMAN REESE, agent for the Ducktown Company, spent eight days in 1912 on the Vestal land and in 1913 spent twenty-one days on lands of Vestal and Casker Lumber Company (Vol. 2, p. 630). The condition of the timber, crops, gardens, etc., was good in both years, except in 1913 it was dry.

While camping on Jacks River they were furnished supplies of vegetables, grain and fruit from the farmers, and they were of splendid quality. The condition of the territory between that section and Copper Hill up to say within two miles of Copper Hill was good. He found absolutely no damage being done by smoke in that section. In 1912 the fruit was very fine. It was not so good in 1913, owing to the late frost. As they traveled outwardly from say a two mile radius of the Copper Hill plant they found no sign of smoke in that country. From their camp on Jacks River they traveled in all directions, riding back and forth through the forests and by the fields, and they walked through places where they couldn't ride. They were on the side of the mountains facing the copper plants. The condition of timber there was very good (Vol. 2, pp. 632-3).

W. G. PAYNE lives in Cherokee County, North

Carolina, and has represented that county in the State Legislature. He went with a party on Frog Mountain, and was there six or eight days. They went through that section, and around above Morganton and back to the North Carolina line. He also went on one or two other trips, all of them made within the last three years (Vol. 2, p. 707). They were provided with horses, but sometimes it was so rough that they couldn't ride, and they went on foot. He went out to ascertain the condition of the crops and timber through that section of North Georgia, and had no interest in the result, and his object was to honestly ascertain the facts. They were in places that were most exposed to smoke. In the years 1911, '12 and '13 they found the crops, orchards and forests in as good condition as any section, according to the quality of the land. He saw no sign of Ducktown smoke on them (Vol. 2, p. 708).

L. A. HUGHES is sixty-four years old, and brother of Judge Hughes of the Court of Civil Appeals of Tennessee. He has made a specialty of examining and purchasing large boundaries of timber for thirty years (Vol. 2, p. 717), and has had farming carried on. In 1912 at the instance of the Tennessee Copper Company he with others went through the section of Fannin County, Georgia, that lies South, Southeast and Southwest of Copper Hill. After they left Copper Hill a mile or so they found the orchards, gardens, fields and forests looking fine. They went through the timber as far as Jacks River, and were also on Fighting Town and Tumbling Creeks (Vol. 2, p. 718), and through Cow Pen Mountain section, on the sides and faces towards Copper Hill, and while they found some dead timber yet there were places away from there worse than on those sections (Vol. 2, p. 719).

J. A. MILLER has been farming for several years and engaged in the saw mill business and dealing in real estate for eight or nine years, and has bought and sold timber. At the instance of the Ducktown Company he went through the North Georgia section looking over

timber and crops. He started on September 9th, 1913, and was there nineteen or twenty days going through the forests and by fields and orchards and gardens. He completely crossed Fannin County. He found the vegetable crops much better there than they were where he lived, at Athens, Tennessee. Everything was green and nice, and was looking prosperous. He was on Fighting Town Creek and Jacks River and in parts of Gilmer County and on most exposed parts of the mountains (Vol. 2, pp. 723-5).

W. L. DALTON lives at Copper Hill, and was with the gentlemen that inspected the Vestal property in September, 1912. They were out six or seven days and made a thorough examination of it. The timber was green. Vestal had the finest chestnut timber witness ever saw, although they claim chestnut is easy killed by the smoke. The damage they saw looked like it was from fire scald rather than smoke; he saw lots of fire signs where laps had been gathered around the other timber and burnt (Vol. 2, p. 723).

C. G. BAUGH is County Surveyor of Fannin County, and has inspected a good deal of timber (Vol. 2, p. 685). He says there is more corn raised in Fannin County now than was raised five or six years ago. Corn is now plentiful in the county, and they have corn to sell.

While the defendant's evidence was being taken, this witness, W. T. S. Dickey, G. P. Dickey and J. H. Quintrell made a trip up Flat Creek in an automobile. They looked at the timber on both sides of the creek and made as careful observation as they could. They also looked at the vegetation, the gardens, fields and crops, and they couldn't see any evidence of damage. The foliage was in good condition, green and growing. As far as he could see the leaves did not appear in any way to have been burnt by smoke. The crops looked well, the corn fairly well. They went from the mouth of Flat Creek to the head of it, and then they came back and went up another prong to its head, and the condition of that prong was about the same as far as the foliage was

concerned. He noticed a good looking field of oats. He was on lands belonging to Mr. Shippen, and the forests on those lands looked as well as any forest he had ever been over (Vol. 2, pp. 857-8). As to the conditions of the forests, crops and gardens on Flat Creek this witness is fully corroborated by W. T. S. Dickey, Vol. 2, pp. 848-851; J. H. Quintrell, Vol. 2, p. 862; and G. P. Dickey, Vol. 2, pp. 874-5; and also by H. P. Davenport, who lives on Flat Creek, Vol. 2, pp. 872-3.

TOM CURTIS lives in Mineral Bluff and runs a threshing machine and threshes wheat over a considerable part of Fannin County. After the tall stack was built, and before the acid plants were put in, conditions were pretty bad at times; a good many leaves were killed and some timber through the country (Vol. 2, p. 670). He thinks a little damage was done crops in the year 1913. He filed a claim and received $40 from the Tennessee Company's fund (Vol. 2, p. 671). For the last three years the crops have been better, and they have threshed more wheat, much more than in his younger days. He has never known the wheat crops to be better. Crops of rye have been good for the last two or three years. He has never known them to be better in North Georgia. Corn crops have been pretty fair. There has never been more corn and other grain raised than during the last two or three years. That section usually buys corn, but during this year (1914) witness does not think any will be shipped in (Vol. 2, p. 672).

R. A. SHIFLETT was for twelve years Chief Mine Inspector for Tennessee, and has made a specialty of examining large boundaries of timber. He was employed by the Ducktown Company to make inspections in North Georgia in 1909 and subsequent years (Vol. 1, p. 469).

In July, 1909, he spent eight days in making a thorough inspection of the timber, and examination of the effect of smoke upon vegetation near the furnaces (Vol. 1, p. 469). At that time the smoke damage extended a little out of Tennessee down to Epworth and the L. &

N. R. R. His next trip was in 1912, beginning September 26th, and he went over a large territory in Fannin, Murray and Gilmer Counties, mostly on the Shippen and Vestal property, and along the head of Cumberland (Tumbling) Creek and East and West of Jacks River and as far South as Cherry Log. The foliage was in good condition (Vol. 1, p. 471). He files a map showing the ownership of the various sections of land. He made a special investigation of the Vestal lands. He noticed evidences of smoke on that trip in one or two places, but the extent of the damage was very slight, and the affected timber was scrubby and of no value, and it covered but little territory (Vol. 1, p. 473). He doesn't think the total area affected was more than five acres, and it was about three miles from the Tennessee Company's plant, and six miles from the Ducktown plant. He made his next inspection in 1913 beginning September 9th. He thinks they were fourteen days on that trip, and six days on another trip in October. Didn't cover a large territory in September. His camp was on Jacks River in Fannin County, and he was over the Vestal property. His work was to make a close examination of the condition of the timber, rather than to cover a large area (Vol. 1, p. 474). He was then about ten and a quarter miles from the Tennessee furnace and thirteen miles from Ducktown, and says there was never any smoke from the furnaces in there. On his trip in October, he saw no evidences of smoke (Vol. 1, p. 475).

On his trips he observed the condition of the fruit trees and crops and found them to be good wherever they had sufficient rain. In 1913 when they had such a drouth he never saw finer vegetables and fruits than there was on Jacks River; and the year before that he never saw finer crops than there were where they camped (Vol. 1, p. 482).

He was on Fighting Town Creek in 1910 off and on from May until September doing some prospecting, but saw no smoke damage anywhere on that creek (Vol. 1, p. 497).

His deposition was taken in Blue Ridge on August 11th, 1914, and he noticed the crops, gardens and foliage of trees as he went along. He saw corn growing within a quarter of a mile of the Ducktown plant right in the Basin and a field across the river from the Tennessee plant. He also saw some gardens which appeared to be green and in good condition. He noticed that the foliage of the trees was green and healthy, and that there were pretty lawns right in the Basin; and he noticed no appearance of injury, everything looking healthy and green. The foliage in Blue Ridge and the gardens appeared to be green and thrifty. He looked around after arriving there, and he was not able to observe any damages whatever arising from smoke fumes there in Blue Ridge, nor had he observed any smoke in the atmosphere (Vol. 1, pp. 484-5).

S. M. BAIN has been full professor of botany in the University of Tennessee since 1901, and is connected with the Government Experiment Station at the University. He has investigated various problems in connection with prevention of plant diseases, and has also made a special study of copper poison on leaves, which extended from 1895 to 1902, and has written a bulletin for the Experiment Station entitled "The Action of Copper on Leaves, With Special Reference to the Injurious Effects of Fungicides on Peach Foliage," which is a standard work upon the subject in this country and in Europe. He has also published a number of scientific papers on related subjects (Vol. 2, pp. 891-3).

He has made a special study of conditions around Ducktown, Tennessee, and in North Georgia, with reference to the effect which the smoke emitted from the furnaces has had on vegetation and forests in those localities. These investigations were made at the instance of the Ducktown Company. He was first employed in September, 1913, and stayed in that section from the 13th until the 22nd of September. He files a map as Exhibit "A" showing his itinerary. They went to Patterson Gap, and down on Jacks River, going up and

down the stream, and went across the Tennessee line into Murray County and down to Ellijay. That trip is indicated by red lines on his map (Vol. 2, p. 894). He made a careful study of the conditions of the foliage of trees and vegetation, and collected specimens and made color photographs. He saw no condition of foliage that would indicate any smoke injury, but found some insect injuries and some fungi, but nothing to indicate any damage by sulphur fumes. He found some dead trees, but no unusual number, and he saw no evidence of any other character of disease than those which appear in forests elsewhere. He took as specimens a few leaves of white pine, some of which were injured by insects, some chestnut leaves eaten by red spiders, and some affected chestnut-oak leaves. He found no diseases on the foliage that one could not account for otherwise than by having been produced by smoke. He also took some sections from trees (Vol. 2, pp. 894-5).

He made a second trip from the 4th to the 6th inclusive of October, 1913, and went as far into Georgia as Blue Ridge, about eleven miles from Copper Hill, and made very much the same character of investigation as upon the first trip, and also made some color photographs. He thinks the frost had then fallen, but can't say to what extent it had damaged the foliage. The condition of the foliage was nothing that could not be found in similar regions at the same time of year. He saw no evidence whatever of smoke damage (Vol. 2, pp. 895-6).

From October 17th to 20th, 1913, he made a trip starting from Copper Hill and going to the point where Tumbling Creek crosses the state line, doing the same kind of work that he had done on former trips, but more particularly studying to what extent the growth of timber had been affected by smoke as indicated by the thickness of the annual rings. He also took some photographs showing the condition of vegetation. The leaves were then beginning to change color, but it did not appear to

be diseased. He then did not see any evidence of smoke damage on the foliage (Vol. 2, p. 896).

On the 23rd and 24th of January he went up Ocoee (Toccoa) River, but saw no evidence of smoke on the evergreens. Most of his work was then done in taking cores from trees to determine the rate of growth, and he took about twenty-eight specimens from post oak, yellow pine, chestnut, crabapple, black jack, Spanish oak, birch and willow (Vol. 2, p. 897). He made another trip into Georgia on the 8th of June, 1914. He went from Copper Hill to Epworth and returned by the road leading from Rogers Bridge, and made several color photographs along the road and inspected the condition of vegetation and foliage with reference to smoke damage particularly, and collected a few specimens. He made a careful investigation of foliage both going and coming (Vol. 2, p. 897). He made ten color photographs all in Georgia except one of a garden, which is just at the Georgia line. The photographs made on that occasion were:

Ex. No. 1. A view of a garden and house on the road side right at the state line, showing an Irish potato patch.

Ex. No. 2. A general view of gardens in the small valley of Painter Town, about one sixteenth of a mile from the Georgia line, and three miles South of Isabella, and one and one-half miles Southeast of Copper Hill.

Ex. No. 3. A view of another garden in Painter Town showing cabbage, onions, and other vegetables, same distance from the furnaces as No. 2.

Ex. No. 4. View of a garden along the road about one mile and a half from Copper Hill, and about four and one-half miles from Isabella, showing cabbage, onions, beets and other vegetables.

Ex. No. 5. View of forest taken from a road about a mile West of Epworth near Fighting Town Creek showing the growth of forest oaks and other hard wood.

Ex. No. 6. A general view showing landscape taken on the road about a mile West of Fighting Town

Creek and near Mobile Creek, two and one-half miles Southwest of Copper Hill, and about five and one-half from Isabella.

Ex. No. 7. Shows a house and dooryard of J. W. Patterson and condition of vegetation about five miles Southwest of Isabella, and two and one-half miles from Copper Hill.

Ex. No. 8. A view of a garden at the same place, showing beans, Irish potatoes, cabbage, onions, sage, etc.

Ex. No. 9. A general view showing the condition of trees and plants from near a point of the road leading from Copper Hill to Pierceville, two miles West of Copper Hill, and six miles Southwest of Isabella.

Ex. No. 10. A view taken at Rogers' Bridge on Ocoee River, showing a residence three miles West of Copper Hill, and five and one-half miles Southwest of Isabella.

The witness also filed twelve additional photographs, Exhibits 74 to 85, all but three of which show conditions of vegetation, forests, etc., in North Georgia, and those three show conditions in the Ducktown Basin (Vol. 2, pp. 934-7).

On this trip he also made a careful inspection of the foliage, and he says generally speaking its condition was good. He saw some evidence of injury from smoke just at the river bank on the Tennessee side as he understood it. The damage was to beets and potatoes in a garden and also to the leaves of an elder and Jerusalem oak, and it appeared to be comparatively fresh. This was on the afternoon of June the 8th, about four o'clock. He couldn't say whether it was done that day or not (Vol. 2, pp. 899-900). (The date is important, as it is proven that on that day heavy clouds of fumes were emitted from the Tennessee plant).

In Painter Town, where photograph Exhibit No. 3 was taken, he saw some injury to some young shoots of red maple, but he was quite certain it was not due to smoke. He noticed injury to black jack oaks along the

road from Copper Hill to Epworth, not far from Epworth, which he thinks was due to smoke and was comparatively fresh. This was about 10 o'clock in the morning (Vol. 2, p. 900). In gardens he occasionally would find potato leaves in a dying condition, and was uncertain as to whether it was due to smoke or some fungi disease, or to drouth (Vol. 2, pp. 900-901).

MR. HAENSELER, an assistant of Prof. Bain's, took cores with an increment borer from fifty-four trees standing along Toccoa River and Wolf and Hothouse Creeks (Vol. 2, pp. 843-4). Prof. Bain examined these cores with particular reference to growth checks, and especially as to whether or not they show improvement in growth in recent years (Vol. 2, p. 930). Out of the 54 cores fifteen showed no checks; on twelve, principally yellow poplar and maple, which are very resistant to sulphur fumes, the rings were too indefinite to read without a microscopic section; seven showed no improvement in the last few years. Of the number that showed no check there were two which showed improvement in 1912 and 1913 and one in 1913 and '14. Thirteen specimens showed improvement during 1912 and '13, five showed improvement in 1911, '12 and '13, and two showed improvement for 1910, '11, '12 and '13 (Vol. 2, p. 932).

For the purpose of illustration a photograph was taken of one of the cores, and was enlarged a hundred and sixty diameters, which is filed as Exhibit No. 73 to Prof. Bain's deposition (Vol. 2, p. 933).

He says he examined a great number of stumps and they showed the same results (Vol. 2, p. 863).

Special attention is called to this evidence of Professor Bain's, not only because of his eminence as a professional man, but because of the very great thoroughness with which his examinations were made, and the truthful and convincing character of his testimony.

DR. J. M. McCANDLESS says he was a member of the first Commission which was appointed to visit the Ducktown section in 1903, and was also a member

of the United States Commission appointed in 1905, and after that was sent by the Attorney General of Georgia into that region in 1908 and 1910. The first two commissions were by authority of the Legislature of the State of Georgia (Vol. 2, p. 835). On the first visit the companies were burning ores on roast heaps, and the whole territory was covered by a fog of sulphuric acid, (dioxide) and the air was so full of sulphuric dioxide that the tears would run from their eyes. They drove through the country and observed the conditions as they passed along, and there had been great damage done by the gases which had been carried by the wind into the ridges and foothills in Georgia.

In 1906 the Tennessee Company put in its big stack, which relieved the condition in the immediate vicinity of the stack but extended the area. After the construction of the acid plants there was a marked improvement in the conditions. The first time he noticed it was when he made his trip for the Attorney General in 1908. They drove through the country from Blue Ridge, and observed the situation and vegetation, and asked questions of residents and farmers along the road, and he reported to the Attorney General that there appeared to be marked improvement. He was through the North Georgia section at the instance of the Ducktown Company in September, 1913, with Mr. Gilchrist, and they got off at Ducktown and drove over through the country. There were evidences of gardens being planted in the vicinity of the Ducktown plant, and they noticed along the roads within a mile or a mile and a half around the plant, that residents had successfully made gardens, and there was even a luxuriant growth of vines and grass on the ridge where they spent the night. The wind that night blew the gases towards the house in which they were sleeping, and there was evidently not enough to destroy the grass on that ridge (Vol. 2, p. 837).

(2) *Evidence of witnesses who testified particularly about specific localities:*

(a) *Improvement since* 1907 *and present condition of vegetation in the Ducktown Basin and localities adjacent thereto.*

S. M. BAIN says that near the works there is no native growth, but that as one goes out conditions improve. On his first trip he walked from Isabella to Pack Mountain and picked up on the walk some sixty species, for the most part native plants. He didn't see any injury that he thought was from sulphur fumes except in the case of a Jimpson weed (Vol. 2, p. 908), but he subsequently saw a Jimpson weed growing in Knoxville, which was affected in precisely the same way. He also saw some foliage at the Staff House a quarter of a mile from the furnace, that was a little injured he supposed from the smoke. He made a careful study of the plant life right close to the furnace, and those were the only evidences he found of smoke damage. He has also observed that section every time he went to Ducktown, and has found no evidence of damage (Vol. 2, p. 909).

If the acid plants put in from two to six years ago had taken care of all the poisonous matter, he doesn't think that the tree growth would have returned upon the barren lands, as a tree could make very little growth on account of the conditions of the soil and the burning off of the grass (Vol. 2, p. 910). On his trip in June, 1914, he took a number of photographs showing the grass and trees growing around the homes and in the gardens of that vicinity. These photographs were taken in color, and they show gardens, peach trees, vines, grass and every kind of vegetable that usually grows in gardens and yards in a most flourishing condition. They also show peach orchards laden with peaches that cannot elsewhere be excelled.

Thirty of these photographs are filed as Exhibits Nos. 22 to 51 (Vol. 2, pp. 910-914). They were taken at points of various exposures, and the general aspect of vegetation is faithfully represented by these pictures, it being the witness' intention to give an accurate re-

production of the conditions as they actually existed in the vicinity of the furnace (Vol. 2, p. 914).

Special attention is called to these photographs, as they are equivalent to an actual inspection of the vegetation growing in the immediate vicinity of this defendant's furnace.

PETER S. GILCHRIST says he noticed that the country around the plant was denuded of vegetation, but that wherever anything is planted it grows luxuriantly. The one or two gardens he and Dr. McCandless visited were magnificent. They looked like an oasis in a desert. They were within a mile or a half mile of the furnace (Vol. 2, p. 826).

W. F. NAUGHAN testifies that since the acid plants have been in operation quite a good many people raise gardens, fruit trees, etc., in and around Ducktown. He has seen tomatoes growing in the Ducktown section, and has himself raised as fine peaches as he ever saw grow in North Georgia or any other place. He has had some peaches each year continuously for eight years except one year when they were killed by the frost. He had a splendid crop of peaches in 1913, and his neighbors who lived right around him had gardens which were pretty fair in the year 1914. Two or three men near him had gardens in which were growing beans, cabbage, tomatoes, potatoes, corn and other vegetables. When the open heap roasting was practiced, and up to the time the acid plants were put into operation he is sure there was no living tree in Ducktown Basin, nor could any kind of garden vegetable be grown (Vol. 1, p. 563).

J. M. SENTER lives in Ducktown, and says that since the putting in of the acid plants in 1908 and 1909 the vegetation and timber in the Ducktown Basin is in good condition. Crops of vegetables are raised in the vicinity of Ducktown and in that section. They grow beets, tomatoes, cabbage, beans, onions, radishes and about all the garden vegetables that grow. The witness himself has raised them. Before the acid plants were

installed they could not raise anything (Vol. 1, pp. 578-9).

J. H. QUINTRELL lives two miles from the Tennessee plant at a mine that is known as mine No. 20, which is not in operation. Having noticed in the paper that the State of Georgia was asking for an injunction against the companies, claiming that it was killing out all the forests and vegetation, he had five photographs of landscapes taken for the purpose of showing the condition of the growth in that immediate section, which pictures are filed as Exhibits Nos. "1" to "5" to his deposition. Picture No. 1 is of a field which was cleared of timber in 1900, and all the timber there shown has grown since that date (Vol. 2, p. 757). The timber shown in Nos. 2, 3, 4 and 5 has grown since 1903, except some old scrub trees shown in No. 4 (Vol. 2, pp. 757-8).

Pine, maple, white oak and red oak are shown in these pictures; and they fairly represent conditions in that entire section, the witness not selecting the best places. The growth of vegetation was never entirely stopped in that locality, but up until 1909 the smoke came over the timber now and then and turned the leaves brown and stunted its growth, but since 1909, when the acid plants were put in operation, the timber has taken on new life, and is today in as healthy a condition as any timber the witness has found in his travels around the country. During the summer of 1913 he was called five hundred miles from Ducktown to open a copper mine down near the coast, and he travelled in Alabama. In consequence of the claim of damages to timber around Ducktown he noticed timber elsewhere, but he hasn't observed a particle of difference in the condition of the timber in the section immediately around his home and elsewhere, excepting in his section for four or five miles around, there are trees and saplings with dead tops, having started to die before the acid plants were put up, but since the acid plants were put in operation they have put forth new branches, and the

bodies of the trees appear to be healthy and growing, while the tops are dead. He has observed no branches that have died in the last few years. This condition is illustrated by some of the saplings and largest trees in the pictures, as in Picture 4, wherein the top of the scrub oak appears to be dead. The witness has farmed a little every year himself, and he and his brothers own a farm a mile and a quarter East of the Tennessee plant, and the wind often travels in the direction of that farm from the furnaces. They have thirty or forty acres there in cultivation. He was through each of the crops several times, except in 1913, and they were all right during the years of 1912 and this year (1914). The timber has not been injured for the last two or three years so far as he can tell (Vol. 2, pp. 759-761). In 1906 the smoke was on the timber shown in the pictures nearly every day (Vol. 2, p. 766).

On cross-examination he states that up to the last two or three years oats could not be raised in that country, but last year he sowed a few acres to see what it would do, and although up until June 1st when he left home the smoke had been carried from the copper company's plant in that direction all summer he could see no effect on them at all. He left the first day of June and took a trip in North Carolina (Vol. 2, p. 864).

W. L. DALTON lives at Copper Hill (Vol. 2, p. 731). When the ore was roasted everything was killed within four or five miles of the plant. After the high stack was constructed the vegetation was not hurt so badly right around the plant, but a lot of damage was done further off (Vol. 2, p. 732). He owns a farm four miles from Copper Hill in Polk County, within one mile of the Georgia line. Before the acid plants were constructed the timber on this farm was hurt badly, all the big timber being killed, and the crops were hurt also. Since the acid plants were installed he has rented his farm, but it has produced good Irish potatoes; and the orchard which was nearly dead has revived and is bearing apples, and new growth is coming out on the trees; and

in 1912 he sowed three acres in oats, and raised as good oats as he saw anywhere, although they are easily killed by the fumes. Young herd's grass is still easier, but he is raising some on his place. In the summer time the winds carry the smoke in his direction (Vol. 2, p. 733). For the last four years the smoke has had no effect on the timber in his section. He has seen leaves damaged a little, but the timber apparently is growing as fast as it can. Can't see any difference between its growth and the growth of timber forty miles away. He thinks John Pelfrey has the finest young orchard consisting of from fourteen to sixteen hundred apple trees that he ever saw (Vol. 2, p. 734).

H. A. R. QUINN lives in Ducktown Basin about a mile and a half from the Ducktown plant, and about the same distance from the Georgia line (Vol. 2, p. 740). He works for the Ducktown Company and owns about three hundred and twenty acres of land upon which he lives. This land all lies between the two furnaces. He cultivates a garden around his home in which he raises corn, Irish potatoes, sweet potatoes, cabbage, lettuce, mustard, garden peas, beans and other vegetables that usually grow in a garden.

On Monday and Tuesday (June 8th and 9th, 1914), he noticed signs of sulphur fumes on mustard and lettuce leaves (Vol. 2, p. 741). This smoke came from the Tennessee plant (Vol. 2, p. 742). He noticed no injury by smoke to vegetation at his place during the season of 1914, nor during the year before except on some old gooseberry bushes and some young garden truck. Since the acid plants were installed he has noticed only a little scorching of the leaves. He has an orchard of about three hundred and fifty peach trees, some of them nine years old, and others set out in about 1908. The trees don't look like anything is wrong with them. There were ripe peaches on them when his deposition was taken, and the green peaches were looking nice. The year before he had about one hundred and ten bearing trees from which he sold $130.25 worth of

peaches besides what he used and fed to the hogs. He noticed no damage to his orchard in 1913 or 1912, nor since the acid plants have been in operation, and the trees are not subject to insects, although he does not spray them, and there is no defect in the fruit. Prior to the installation of the acid plants he knew of no fruit trees in that section, but there might have been a few. Fruit trees were then killed, but he does not know whether it was by smoke or worms. Young sprouts are now coming up between the furnaces, and broom sedge on which the cattle pasture, grows there (Vol. 2, pp. 733-4).

J. W. PELFREY lives in Fannin County, Georgia, about two and a half miles Southwest from the Tennessee furnace, and knew the country before the acid plants were put in. The smoke then killed the timber and vegetation to some extent. Since the acid plants were constructed it has been a great deal better. He has fifty or sixty peach trees five to eight years old which as a general thing yield a good quality of peaches. He has fifteen hundred apple trees, three hundred of which are bearing, and yield good fruit, except when bothered with drouth. The timber was cut off of a lot about two miles from the Tennessee plant some ten or twelve years ago, and a new growth of timber has sprung up which looks healthy (Vol. 2, p. 615). The crops were reasonably good in 1912 and 1913. They had a little drouth in 1913, and also the present year. In 1912 the fruit crops were extra good. When smelting operations affect the forest enough to kill it, it also affects the fruit trees about the same as other trees. There was no smoke on the leaves in the forests where he lived in 1914; but he had seen a little sign of smoke on vegetation at Fryetown, which is between where the witness lives and the Tennessee plant (Vol. 2, p. 616).

J. C. QUINTRELL lives in Fannin County, about two miles South of the Tennessee Copper Company's plant, and was raised there on a farm. Prior to the establishment of the acid plants nearly all the timber was killed on the farm. The growth would start up

but would be killed down each year. Most all the forest timber was killed (Vol. 2, p. 620). Now it has a very nice young growth of timber which has been growing ever since the acid plants were put in. This timber is of different kinds, but principally white oak, and is now two inches and up to three and four inches, and appears to be thrifty and looks well. He can't tell much difference in that and young timber elsewhere. There was a little damage in some of the gardens, but not very many (Vol. 2, p. 621). Between the two furnaces there is a right smart of young black oak and white oak which appears to be thrifty, and sage grass grows between the two furnaces, which is burnt off every year to the injury of young growth (Vol. 2, p. 624).

M. T. FOUTS resides in Polk County, Tennessee, and has been a member of the House of Representatives and also State Senator (Vol. 2, p. 638). He was familiar with the Ducktown section before the acid plants were built. The conditions as to vegetation, crops, gardens and forests have certainly been very much improved since the acid plants were installed. In 1901 there was nothing growing in and around the Basin to amount to anything, not hardly a tree. "Now there are shade trees, gardens, and I saw alfalfa clover growing one hundred yards of the Isabella Company, the other day, something I never saw growing in Polk County. I know some gardens have been there in Ducktown for two or three years." "And the finest peaches I ever saw growing in my life I saw growing in Ducktown last year" (Vol. 2, pp. 641-2).

He has observed the farmers in Fannin County, Georgia, near the Tennessee line growing vegetables, and last year one Mr. Payne had within six or seven miles of Isabella some of the finest apples he ever saw. Since the acid plants were put in the furnaces are not destroying crops and timber in North Georgia (Vol. 2, pp. 641-2).

C. G. BAUGH says that in Pack Mountain three or four miles from the plant the timber is in as good

condition, and there is as little dead timber as in any timbered section. West from the Tennessee Company there is a lot of dead timber. When one gets further back it is better, but after one goes three or four miles from the plant the quantity of dead timber does not increase (Vol. 2, pp., 690-1).

G. C. PARKS has lived in Ducktown for four years from 1906 (Vol. 1, p. 586). He says that when the tall stack was put up the smoke zone was greatly increased. Since the acid plants were put in operation the smoke seems not to affect the crops around Ducktown to amount to anything. He makes good truck there, and he set out some fruit trees, and had some very nice peaches growing on them, and there was a fine lot of peaches all through the Basin (Vol. 1, pp. 588-9).

W. G. PAYNE lives in Cherokee County, North Carolina, and owns over two hundred acres of land, some within three or four miles of the Ducktown Company's plant, and he raises corn, rye, oats, potatoes, fruits and other crops of like character. Neither his crops nor timber has been damaged by the operation of the copper companies (Vol. 2, p. 707).

W. M. STEPP lives at Epworth, three or three and one-half miles air line from the Tennessee plant, and seven or eight miles from Ducktown furnace. He was living at Epworth when the acid plants were installed (Vol. 2, p. 605). Before that everything was scorched up pretty badly there by the sulphur fumes, and about one-fourth of the timber was killed. It killed oak and pine. Since the acid plants were established it hasn't done very much damage, but some has been done when something has been the matter with the Tennessee plant, which has happened once in a while. Witness has been around the store and can tell when something happens at the Tennessee furnace, and it is that furnace to which reference is had when he speaks of something happening. He can see that furnace from a ridge at Epworth. Since the establishment of the acid plants the timber in North Georgia, particularly around Ep-

worth, "is coming out fine;" "is looking well. It is green and nice." If there is any damage done to it at all it is mighty little. Can't tell that any timber has been killed since the acid plants were built. The old timber looks a great deal better and has come out a right smart.

He noticed no damage to timber at all last year, and but very little to the vegetation. He made a garden and if it was damaged he did not know it. He doesn't think it was damaged in 1912 to amount to anything. There might have been a few plants hurt (Vol. 2, pp. 606-7). He doesn't think timber has been injured since the acid plants were put in to amount to anything (Vol. 2, p. 610).

(b) *Improvement since* 1907 *and the present condition of vegetation in and around Mineral Bluff.*

R. T. HAMPTON lives at Mineral Bluff about six miles from the Tennessee plant and about ten from the Ducktown plant. He says the most injuries there were during the two or three years after the high stack was constructed—in 1906, '07 and '08. It was not near so bad before. There were times when the smoke was so strong it would make one cough, and when it cleared away, the little leaves on the vegetables and timber would turn brown, and the tender twigs and young vegetation would parch up like a fire had run over it. He supposes it was the cause of a good deal of timber dying. It was hard on tomatoes, potatoes and peas. Since the construction of the acid plants he has not seen any effect at all on the leaves and trees. The Irish potatoes were not good in 1914, but he thinks it was on account of the drouth. He hasn't noticed any smoke over there. He couldn't say it damaged anything in 1913. He noticed no damage to timber or vegetation in that section in that year, and didn't see any during the year 1912. He hasn't seen any damage there since the acid plants were constructed. In 1906, '07 and '08 the leaves on the timber were burned brown, just like there was quite a frost, and from a great many trees the leaves would fall by the first of September, but that isn't seen

since the acid plants were constructed. Trees stay green up until the frost kills them. He has had four acres of corn cultivated for about six years, and makes about fifty bushels to the acre. He has noticed no injury to the corn that he could tell, and no more dead leaves on the trees than on trees fifty miles away. He does business with a great many men and rides over Fannin County to see different parties, and in places formerly barren young trees are growing and shrubbery coming up (Vol. 2, pp. 651-3).

W. T. S. DICKEY lives at Mineral Bluff, and has a small farm and is a contractor. He says before the acid plants were constructed there was a great deal of damage from smoke. The timber would be burnt along on the side of the mountains, and it would injure the vegetation and crops more or less. The leaves would brown and look like they had frost on them and would fall off. The timber would die he thinks from the effects of smoke. One could smell the smoke. For the last two or three years according to his observation he cannot see that the smoke is doing damage to vegetation around where he lives. He has noticed along the roads towards Murphy and by Grainger and down to Atlanta and to Ducktown, but has noticed no damage during the season of 1914. However, he saw some smoke in there on Monday, the week before (June 8th, 1914), but there wasn't enough to be unpleasant, and he noticed no bad effect on the vegetation. He observed no injury to the vegetation during the year 1913, and remembers of none in 1912. He has seen rye growing in the neighborhood during the season of 1914, and considering the land it is the best he ever saw (Vol. 2, pp. 656-9).

J. F. McNELLY lives at Mineral Bluff, and sells fertilizer in Fannin, Gilmer and Union Counties. After the erection of the high stack the smoke seemed to affect the timber, the vegetation and the crops (Vol. 2, p. 662), and seemed to extend over half of Gilmer County (Vol. 2, p. 663). He remembers the installation of the acid plants, and he has noticed no damage to

the timber or to vegetation through that section from smoke in the present year (1914) (Vol. 2, p. 663). He noticed a little damage in July of the year 1913—two or three times leaves being a little bit browned, but he doesn't think that was sufficient to do any damage to the timber. He noticed no damage last year to garden vegetables or fields. The year before he noticed a little damage two or three times during the season, but doesn't think it did any damage to the timber (Vol. 2, p. 654). Since the installation of the acid plants the condition has been considerably better. Through the sections he has traveled he observed during the years 1911, 1912 and 1913 just a little effect from the smoke on vegetation and on the leaves of the forest, but doesn't think there has been enough to do any appreciable damage (Vol. 2, p. 665).

TOM CURTIS lives a mile and a half from Mineral Bluff and has farmed all of his life. He says that after the tall stack was built it was pretty bad at times. A good many leaves were killed and some timber through that country (Vol. 2, p. 670). It has been getting better about three years. He does not think there has been any damage during the year 1914. Smoke was in there in the spring, about the 6th and 7th of June, and some in May. In the year 1913 it looked like vegetation was damaged a little, and the witness put in a claim and got $40.00 (Vol. 2, pp. 670-1).

P. T. WILLIAMS lives near Mineral Bluff. After the high stack was put up by the Tennessee Company the leaves on the timber were killed, and the corn would be small and chaffy. He hasn't noticed any damage during the year 1914 to the forests or vegetation. He has seen some apple trees from which the fruit dropped off, but they had some heavy frost in the spring, and a drouth in the month of May. He has noticed no signs of sulphur fumes on the leaves, but did notice some potato tops scorched, but did not know whether it was from dry weather or smoke. In 1913 in the Fall he

saw some corn tassels dried up, but the corn had a good sized ear (Vol. 2, pp. 676-7).

C. G. BAUGH lives at Mineral Bluff, and has been acquainted with that section for forty years. The erection of the high stack by the Tennessee Company had a bad effect apparently, so far as timber and vegetation was concerned; but since the construction of the acid plants he can't say that any serious damage has been done (Vol. 2, pp. 685-6).

R. L. TURNER lives a mile and a quarter from Mineral Bluff and is a farmer. He says after the high stack was first put up in that section they were troubled a right smart with smoke, but since the acid plants were put in, he can't see very much damage. The condition of crops is fair in 1914, but they had an unusual drouth of six weeks, and he thinks they had some heavy May frost, which generally affects the fruit crop (Vol. 2, pp. 693-4).

G. P. DICKEY resides at Mineral Bluff, is a merchant, and represented Fannin County in the Legislature in 1912, when he canvassed the county (Vol. 2, p. 747). He saw very little evidence of smoke damage around Mineral Bluff in 1913. In 1910 it was pretty bad, but nothing like it was before. In 1911 it was better, and continued to improve in 1912 and 1913. This year (1914) the foliage is as pretty as he ever saw it. Last year (1913) he saw no evidence of injury sufficient to damage timber. He looked over his timber to see whether it was injured enough to put in a claim and decided that it was not. He owns more than three hundred acres of land well timbered. There was some damage to this timber in 1910, and less in 1911 (Vol. 2, p. 749). There is a good deal of rye, and it is said that it is the best crop they had ever had. Rye is a tender plant and is susceptible to smoke fumes. There was a good crop of rye last year (1913), and it is better this year. He has traveled from his own home to his place near Copper Hill and down the North Carolina line, and has been over to Blue Ridge, and from there down

to Copper Hill, but has noticed no evidence of injury in that entire section during the present year (1914), and saw no evidence of injury sufficient to do real damage during the last year. He then had a good garden and raised some fine potatoes, cabbage, beans and stuff of that kind (Vol. 2, p. 750).

M. D. RICHARDS in 1913 lived in Fannin County, Georgia, about twelve miles from Copper Hill. He grew that year corn, peas, beans, tomatoes and garden truck and raised a good crop, the best that was ever raised on the place. He didn't consider that his crop was damaged any from sulphur fumes, but a little from dry weather. He was back and forth to Copper Hill and found the forests and crops in a reasonably good condition, like they were at his place, all the way through (Vol. 2, pp. 700-701).

(c) *Improvement since* 1907 *and present condition of vegetation in the vicinity of Morganton.*

T. A. BYERS lives near Morganton ten or eleven miles direct course from Copper Hill. He says after the high stack of the Tennessee Company was put in and before the acid plant was constructed the smoke affected that section. The leaves of the timber would crisp up and turn brown. After the acid plants were constructed no sign of the smoke could be seen. If there is any damage being done to his section he cannot tell it. He is engaged in truck farming and farming and hauls his truck to Ducktown, and has been so engaged for about fifteen years with the exception of three. He has truck farmed for the last four or five years, and grows onions, cabbage, peaches, beans and tomatoes. Last year he and his uncle had in vegetables an acre or an acre and a half. They kept no books, but they realized from $500.00 to $1,000.00. They had in about the same amount the year before and realized about the same sum. During the year 1914 they had about eight acres in corn and an acre and a half or two acres in truck, and when his deposition was taken June 19th, 1914, he had hauled eight or nine loads from his place. He makes more off

tomatoes than anything else. No damage had been done in that section during the years 1914 and 1913 that he could tell (Vol. 2, pp. 679-81).

GRANT ORTEN lives in Morganton and farms. He says if there has been any damage from smoke he has never noticed it. The crops for the year 1914 are the best he has ever seen on Start Creek (Vol. 2, pp. 1063-4).

T. E. GARREN lives in the Morganton District and his business is farming. He is acquainted with the Dora, Mineral Bluff, Start Creek and Morganton Districts, and says that the corn, peas and bean crops for 1914 are all good. He has been out eight or nine miles from his home up the Toccoa River (Vol. 2, pp. 1067-8).

J. C. ADDINGTON lives one mile East of Morganton, and about thirteen miles air line from Copper Hill. He has been farming at that place since 1909 and cultivates forty acres. When he began it was grown up in sassafras sprouts and blackberries with the exception of a few little patches. In the year 1913 he had four or five acres in corn upon which he made about three hundred bushels. Upon one acre he produced one hundred and thirty-six bushels and fifty-two pounds for which he received the premium for the best acre of upland corn in the state. He raised also a crop of Irish potatoes on two or three acres which ran a hundred and eighty-nine bushels to the acre, and he followed the potatoes with corn and made seventy-five bushels of corn to the acre. He made these crops though the season was sufficiently dry to injure them. When he first began he noticed some effects of sulphur smoke in certain places (Vol. 2, pp. 878-880), but during the present year he has noticed no signs of smoke in that vicinity, and has seen nothing in his crops that he could ascribe to smoke. He noticed some signs of injury to leaves either the year 1913 or '12. He had cut his wheat when his evidence was taken, and he thinks it produced about fifty bushels to the acre, and files a few heads as an exhibit (Vol. 2, p. 881). He identifies a

picture, which appears on page 14 of a pamphlet styled 1914 Year Book, published by the Morris Fertilizer Company, as a picture of his prize acre of corn (Vol. 2, p. 882).

He sent other pictures at the same time to the company and wrote them a letter in which he stated that Pictures Nos. 1 and 2 show a piece of corn that would make about a hundred and fifty bushels to the acre, and if there had been rain it would have made two hundred, and might do it any way. No mention was made in this letter of any damage from smoke fumes, and he says the statements in the letter were correct (Vol. 2, p. 882).

However, Mr. Addington presented a statement to the Board which distributed the Tennessee Copper Company's fund, claiming that he had been damaged in the season of 1913 about $800.00, half of which he attributed to sulphur fumes (Vol. 2, p. 887), and the Commission allowed him $15.00 (Vol. 2, p. 884).

The foregoing is the substance of the evidence introduced in chief by defendant. It relates very largely to conditions existing immediately around the furnaces and in nearby vicinities, and other localities which would most likely be affected by escaping fumes. To this is added considerable evidence of general conditions through North Georgia given by witnesses of whom, some have made special investigations, and others have had special opportunities to know the facts. This evidence, with the exception of one witness, was taken in Chattanooga and Knoxville from June 18th to 26th, 1914. Plaintiff thereafter took its evidence at Blue Ridge, Georgia, from August 12th to 21st, 1914.

2nd. Plaintiff's evidence as to injuries to vegetation by smoke fumes, and defendant's evidence in rebuttal.

There are two circumstances with reference to plaintiff's evidence which merit special attention: First, plaintiff does not attempt to refute defendant's evidence relating to conditions in the Ducktown Basin. It is not

denied that up to the construction of the acid plants this section which immediately surrounds the furnaces was largely denuded of vegetable growth, and that it was impossible to produce there a garden or any kind of crop, or for a forest tree to there exist. While there is a place near the furnaces which remains denuded because the soil is washed away and all vegetable seeds were destroyed, yet that the smoke from the furnaces does not prevent vegetable growth there is demonstrated beyond all question, not only by many witnesses who reside there and actually grow fruits and vegetables, but by color photographs which re-produce these orchards, gardens and lawns in open court. This, however, is passed over in almost complete silence in plaintiff's testimony.

The second circumstance is that plaintiff's evidence was taken at Blue Ridge, a point a little East of South from the furnaces situated in a gap of the mountains and hardly half the distance from the furnaces to localities in which much damage is claimed to have been done during the year 1914, and in a direct line between the furnaces and such localities. Furthermore, it was proven and not denied that prior to the construction of the acid plants the entire section around Blue Ridge was badly scorched by the smoke. Yet, although parts of two weeks were spent there in taking proof, not a word was introduced by plaintiff with reference to any smoke injury there existing, though time and again the attention of witnesses was called to the condition of vegetation and of the foliage on trees in the immediate vicinity of the Court House in which they were examined.

Plaintiff's evidence relates almost entirely to the following sections of the country:

(1) *Epworth, Fighting Town Creek, Madola, Pierceville, Barnes Mountain, Granny Marr Mountain, Mule Top Mountain, Higdon's Store, Little Fighting Town Creek, Tumbling Creek, Jacks River, Patterson Branch, Adams.*

These several points and localities lie Southwest

of the furnaces, extending from Epworth, which is but three or four miles distant from Copper Hill, to Jacks River section and the head waters of Fighting Town Creek, probably twelve or fifteen miles distant.

Plaintiff's Evidence.

Plaintiff examined the following witnesses with reference to these places and localities:

DR. HEDGECOCK took a flying visit in an automobile through some of these places a few days before his deposition was taken. He passed through Epworth, Madola, and was on Barnes and Granny Marr Mountains, and took thirty-seven specimens from Granny Marr Mountain, Barnes Mountain, in and near Epworth, and along the road between Blue Ridge and Copper Hill, which he files as exhibits, and which he claims show evidence of smoke injury. He says they observed injury near Epworth and extending at various points along the road from Epworth to Madola, and beyond Madola at a number of points to Barnes Mountain, and on Barnes Mountain there was abundant injury, and from there it could be seen with a field glass on Mule Top. In some places the injury was recent and in others probably it occurred two months ago (Vol. 1, pp. 6-9).

This witness is a plant pathologist in the employ of the United States Government, and it is to be presumed that he and the witnesses Clark and Johnson, who are Government foresters, appear as witnesses on behalf of the plaintiff because the United States Government is purchasing large bodies of lands in North Georgia and East Tennessee, some of which approach as near as four or five miles to these plants (Vol. 1, p. 59.)

He testifies at length about his experience in looking through forests which have been affected by smoke fumes in Arizona, California and Montana, and discourses learnedly upon the different zones existing around copper plants. But when taken as a whole, it clearly appears that his evidence it not reliable. He assumes an attitude of antagonism to the defendant, and is

often not reasonable in his statements. He can tell practically nothing about the capacity of the furnaces he visited in the West, or how they are operated, or whether they extract any of the poisonous fumes from the smoke (Vol. 1, pp. 20-21.) Therefore his experience there is of but little value. He knows nothing about either the Tennessee or Ducktown plants (Vol. 1, pp 22 and 28.) Although he went through Ducktown he will not admit that he saw any gardens containing beans, peas, radishes and things of that kind, or anything more than a three by four patch. He claims he saw some corn patches and grass that looked sickly; but didn't see any peach orchards. He says, however, that he went through rapidly in an automobile; was afraid they were violating the speed law, and pretty near ran over a horse, being in a hurry to get back to Blue Ridge to get dinner (Vol. 1, pp. 23-24.) He won't answer frankly that if fine peach crops are as regularly produced near the furnace as elsewhere in the country such fact is an indication that there are no damages from smoke during the blooming season of the peach tree (Vol. 1, p. 33.) He won't answer definitely what he would conclude if he found good corn, oat, wheat and rye fields in the neighborhood (Vol. 1, p. 34.) On one of his trips he says he made no special observation of crops, more than a blackberry twig (Q. 236, Vol. 1, p. 35.) He didn't look at anything except the beans and blackberry bush in the garden where the specimen taken from the blackberry bush was found (Vol. 1, p. 36); and that was the only garden he looked into; and he didn't pay any attention to the corn fields (Vol. 1, pp. 35-6). But he admits that forest fires have damaged the forests in North Georgia (Vol. 1, p. 37).

His deposition was taken in Blue Ridge, and he was asked to look out from the window, and see whether there was any evidence whatever of damage from smelter fumes there, but refused to do so. He admitted that there were leaves within thirty feet of him, but he claimed that *one* was dry, and slightly yellow, not as green as it might be, and that very probably it was

injured by smoke. He claimed to have seen a slight yellowing of leaves in Blue Ridge, but admitted it was not a good type of even chronic injury, and that there was no acute injury there. He was told that if he would turn his eyes he could see some peach trees, but he refused to do it unless ordered by the Court. He also refused to look at some corn nearby, because it was undignified and unprofessional, and inaccurate. He was told that he could see various kinds of vegetation if he would but look, but he refused to look (Vol. 1, pp. 38-39).

When the views of scientists are called to his attention he professes to think but little of them, and does not recognize the authority of any one, or agree with anybody altogether (Vol. 1, pp. 52-54).

A comparison is invited between the kind of examination of the forests and vegetation in general made by this witness and also the inherent character of his testimony, and the very extensive, painstaking and careful research and experiments made by Professor Bain, of the University of Tennessee, and his dignified and perfectly frank and fair manner of testifying. After he was first examined this witness made another trip to Flat Top Mountain and on Big Frog, which is West of the copper plants, and extends across the State line, and he claims to have seen smoke injury on Big Frog Mountain (Vol. 1, p. 443).

H. L. JOHNSON and E. B. CLARK, young foresters, accompanied Dr. Hedgecock on his several trips and more or less corroborate him as to what was observed, although they have but little knowledge of smoke injuries (Vol. 1, pp. 55-8, 302-6 and 429). The attitude of these witnesses was very similar to that of their superior, Dr. Hedgecock. Mr. Clark in substance admitted that they were not looking for vegetation that was not injured, but had their attention fixed solely upon injury (Vol. 1, Qs. 151-154, p. 317). When recalled he claims to have found more pronounced injury on Flat Top Mountain and Young Cane, in Union County, about twenty-one miles from the Copper Hill plant (Vol.

1, p. 429). This shows the absurdity of his entire testimony, as it is not believed possible for there to be any smoke damage of consequence in the forests at that distance from the furnaces.

A. E. SHARPE, who for ten years has been woodsman for the Shippen Lumber Company (Vol. 1, p. 134), says that in getting up testimony for the State in this case he has traveled over a large part of Fannin and Gilmer Counties. A week or two before his deposition was taken he made a trip on Barnes Mountain and Jacks River and Granny Marr Mountain and in the Fighting Town Creek country, and says that he found some sections not affected this year which have been heretofore affected, and that to the Southwest of Blue Ridge, on Barnes Mountain and from there back North into Granny Marr there was damage (Vol. 1, p. 139).

J. P. VESTAL owns twelve thousand acres of land in person and three thousand in connection with his son (Vol. 1, p. 175), and had a case against the Ducktown Company for damages which was tried during the first part of May, 1913, in the Federal Court at Chattanooga when there was a mistrial, and was again tried, when the jury rendered a verdict against him (Vol. 1, p. 173). He tells of the presence of smoke in that section at different times during the year 1914 and especially on the 8th and 9th of June, and describes smoke damage to forests which he saw when along with Dr. Hedgecock (Vol. 1, pp. 166-169).

T. R. HARKINS lives on Jacks River (Vol 1, p. 235). He says crops are reasonably good this year (1914) (Vol. 1, Q. 17, p. 236), and that the injury this year is bad on Barnes Mountain and on Blue Ridge, but doesn't think it was so bad last year (Vol. 1, p. 237). This witness came ten, eleven or twelve miles through forests to give evidence, and when asked if the forests through which he passed were not in a healthy condition he says it is some greener this year, and can't positively state as to its condition (Vol. 1, Q. 19, p. 239). He has under consideration the filing of a claim with

the distributors of the Tennessee Copper Company fund (Vol. 1, p. 240), and has been an employee of Vestal (Vol. 1, pp. 241-2).

W. M. BARNES lives at the foot of Barnes Mountain (Vol. 1, p. 257). He has seen smoke in there this year and for many years and describes its effect upon the timber (Vol. 1, p. 257), and says it wasn't so bad last year as this (Vol. 1, p. 258).

B. F. WEEKS, who is Post Master at Epworth (Vol. 1, p. 352), claims to have noticed injury around that place, but says they had a very dry season, which he thinks had some effect on the potatoes and garden truck (Vol. 1, p. 353). He has a very fine oak grove at Epworth, but thinks he saw some signs of smoke injury on it, but not as much this year (1914) as before (Vol. 1, p. 356).

J. G. ADAMS, a photographer from Atlanta, took a number of photographs of landscapes in this section, to which and to defendant's photographs relating to the same places special attention will be hereafter given.

Evidence in Rebuttal.

Defendant introduced the following evidence relating to this general section in rebuttal to the testimony introduced:

W. T. HIGDON lives at Higdon's Store and is Post Master. He owns a hundred and sixty acres of land and has farmed there since 1889. He says there was some smoke in that locality about the 8th and 9th of June, 1914, from which resulted slight damage. He has worked in the crops but has not noticed that they were injured at any other time during the year (Vol. 2, p. 1125). He has noticed no damage to forests during the season except they have had an unusually dry year, the worst in twenty-six years. Some trees died, but he thinks it was from the drouth, which extended through May and June and up to the first of July (Vol. 2, p. 1126).

J. S. DAVIS lives on Jacks River and farms, and owns an orchard. He says he has good corn the present year (1914). If any damage has been done by smoke during the year he has not seen it. He is familiar with the country up and down Jacks River for several miles, and has been all through the country, and if there has been anything like smoke injury to vegetation he has not been able to find it (Vol. 2, pp. 1039-40).

W. T. POSTELL lives near Flat Mountain and has been on the mountain half a dozen times during the season of 1914, and has seen no damage that he thought was from smoke. He is a farmer and cannot tell that there has been any damage to his crops, and has seen no damage from smoke in his neighborhood (Vol. 2, p. 1128).

G. M. PANHORST, Chief Clerk of the Tennessee Copper Company, was introduced by plaintiff to prove that on certain days the Tennessee plant was not in operation.

On cross-examination he testified that he has been through Epworth, Madola and Pierceville, and on Fighting Town Creek, and that the forests and vegetation look good, and that he has noticed no apparent effects from sulphur fumes through that whole stretch of country (Vol. 1, p. 227), and that they had a bad drouth which was broken on the 4th of July (Vol. 1, p. 229). In taking proof in chief, a number of witnesses, whose residence has heretofore been stated, testified about this section, and it will be further considered in discussing the photographs on file.

(2) *Ellijay, Yukon, Turnip Town, Mountain Creek, Carter Cay and other points in Ellijay region.*

Plaintiff's Evidence.

Notwithstanding the great distance of this section from the furnaces, the greatest number of witnesses testify with reference to injuries in and about these several localities. This is doubtless because the Shippens

live at Ellijay, and the Shippen Lumber Company owns the larger part of that territory.

The several witnesses who testify for plaintiff are: JAMES F. TEEM (Vol. 1, pp. 69-74), who has filed a claim for $400.00 with the Tennessee Copper Company Fund Commission (Vol. 1, p. 78); J. H. CLONTS, who has filed a claim for $100.00 a year for sixteen years (Vol. 1, pp. 79-82 and 88); C. S. NORTHCUTT, who looks after the Northcutt orchard, which contains sixty-five hundred trees (Vol. 1, pp. 93-4), and who admits that there is San Jose scale in the orchard (Vol. 1, p. 95) and that the effect of candle moth upon trees is similar to that of smoke (Vol. 1, p. 97); ASBURY HINSON, who has overseen for many years the Arnold orchard, which contains nine thousand and sixty trees (Vol. 1, pp. 98-99), and who says that the only damage he has noticed, except some damage from three to five weeks ago to corn silks, was on the 8th and 9th of June (Vol. 1, p. 104), and admits that there is some San Jose scale in the Arnold orchard (Vol. 1, p. 105); W. A. PAINTER (Vol. 1, p. 108-109); W. S. HINSON (Vol. 1, pp. 114-116); GEORGE HINSON (Vol. 1, pp. 118-119); J. M. WITHROW (Vol 1, pp. 128-131, 133); A. E. SHARPE (Vol. 1, pp. 134, 141-153); T. S. JOHNSON (Vol. 1, pp. 186-7); J. G. DeWEESE (Vol. 1, pp. 346-9); and W. H. SHIPPEN (Vol. 1, pp. 317, et seq.), and FRANK E. SHIPPEN (Vol. 1, pp. 395, et seq.), President and Vice-President, respectively, of the Shippen Lumber Company. This Lumber Company is the owner of a hundred and eight thousand acres of timber in North Georgia, and in order to understand the animus of these two witnesses it is necessary to read their testimony in full. Consideration will be hereafter given to their connection with the instigation and prosecution of this case.

W. H. SHIPPEN helped to procure the witnesses and was present advising with plaintiff's attorneys a great part of the time the evidence was being taken (Vol. 1, p. 330), and contrary to the testimony of all other

witnesses introduced by plaintiff, except possibly Frank E. Shippen, he testifies that he can not see much difference in the condition of the forests now and before the acid plants were constructed; "if anything, I think it is worse, because the injury has been applied longer" (Vol. 1, Q. 143, p. 340).

FRANK E. SHIPPEN claims that he from May 1st to the date of taking plaintiff's testimony, kept a diary which shows the several dates upon which smoke appeared at different points in that general section, and he names fourteen days in May, thirteen days in June, fifteen days in July and nine days in August up to the sixteenth of the month (Vol. 1, pp. 395-7). No other witness in this respect makes claims anything like so extravagant.

DR. HEDGECOCK and Foresters CLARK and JOHNSON also made a brief visit through that section, but say but little about injuries they found there.

While many of plaintiff's witnesses testify as to the appearance of smoke in that section, yet but few of them claim that any *great* damage has for the last few years been done to the forests, confining it mostly to injury from time to time to some particular kind of vegetables or crop; but especial emphasis was made by some of the witnesses on alleged injuries to the Northcutt and Arnold orchards and a few small orchards in the same neighborhood.

Plaintiff's Evidence in Rebuttal.

As these localities were all remote from the furnaces and as that part of the intervening territory which lies near the furnaces had been given special attention in defendant's testimony in chief, but little consideration was then given to this section; but in rebuttal defendant introduced the following evidence:

W. P. HARPER is cattle inspector for Gilmer County, and as such has been in the woods a great deal and through different parts of the mountains, and has

passed by many fields and orchards. He says that during the year 1914 there was very little damage, and the crops in Gilmer County were very fine, much better than common, though there had been some dry weather (Vol. 2, pp. 1029-31). He was read the testimony of Frank E. Shippen, wherein he detailed the dates upon which he claims smoke had appeared at the points mentioned, and the witness stated that he had seen nothing approaching such conditions, and had seen the smoke down there but very little during the year (Vol. 2, pp. 1032-3).

B. H. HOLT lives at Blue Ridge, but has traveled in and around Ellijay and in Carter Cay Valley. He made a trip through there about the 8th of September, when pictures were taken of representative places, spending about twenty-one and one-half days on the trip, and he examined various kinds of crops (Vol. 2, pp. 1091-2). He says that he saw no damage to the forests on the whole trip except a place which was close to Barnes Mountain. In the Ellijay section and Carter Cay Valley, and on Turnip Town Mountain and Bushy Head Mountain he detected no smoke injuries, and there was no injury to the growing crops that he could tell, but they were considerably better than usual. He has never seen a better crop in those vicinities, though he is forty-five years old and has known that section all of his life (Vol. 2, p. 1093).

HAM HOLT is a salesman and travels through Gilmer County and other parts of North Georgia, and says that the crops in that country for the year 1914 are the best that have ever been raised in North Georgia (Vol. 2, p. 1044).

J. C. AIKENS has lived in Gilmer County for thirty-six years, near Stovall, and is familiar with Turnip Town Mountain and Carter Cay Valley. He has given attention to vegetation and forests in that section of country (Vol. 2, p. 1109). He worked with Mr. Quintrell for defendant about the first of September and went through a large section of that mountain

country, and noticed the timber and crops pretty carefully, and knows the whole territory through Gilmer County. He saw no signs at all of damage from smoke on the trip. On his land the crops are (1914) as good as he ever saw them, though they were injured early in the summer by drouth. The gardens he saw were doing fine, and there was no appearance of smoke injury to them or to any of the crops. Some orchards were ful of fruit, and he saw no sign of smoke injury on fruit trees. He made an examination of the forests and crops around the land of Mr. Teem and Mr. Evans, who were witnesses for the plaintiff, and does not think he saw any evidences of smoke injury there, but Mr. Evans had a patch of corn that had the rot, or something like smut. Witness did not know what it was (Vol. 2, pp. 1110-1111).

M. S. CLAYTON lives four miles East of Ellijay and has noticed the crops through that section, and says they are good, a great deal better than common. He has observed no signs of smoke injury to them. He has been about Ellijay and has given attention to the crops there and says they are in good condition, so far as he noticed. He saw no signs of smoke damage (Vol. 2, pp. 1115-17). He went with Mr. Aikens and others through parts of Gilmer County to the Fannin County line. They traveled ten days and averaged twenty or twenty-five miles a day. He saw no evidence of smoke either to the forests or crops on the trip. In 1913 he made observations through the forests in seven Districts of the county. He was forty-six or seven days on the trip and gave careful attention to the forests, and the only smoke damage he saw was a little about Epworth School Building (Vol. 2, pp. 1118-1120).

T. N. BENNETT lives one mile North of Ellijay, owns a farm and is acquainted with the Ellijay River Valley for a distance of eighteen or twenty miles. He says if there was any damage done through that section in 1914 he could not discover it. It might have been possible that the smoke could have scorched in there a

little, but he never saw it. He never noticed any smoke there at all and did not smell any (Vol. 2, p. 1037).

J. W. CLAYTON lived in Atlanta but owns a farm in Gilmer County, about five miles East of Ellajay, and has been there almost constantly for the last three years. He has to some extent observed the forests in that section for the purpose of determining whether or not there has been any smoke injury through there during the season of 1914, and there has been none that he could see. He has seen nothing the matter with the foliage. He detected no injury except occasionally he would see a tree with the foliage on the under side apparently dying early in the season, just as one would see in going elsewhere through the woods. They had considerable trouble there in the spring (Vol. 2, pp. 1055-6).

A. N. JOHNSON has lived in East Ellijay for twenty-four years and was over a portion of Carter Cay Valley during the summer. He was constructing buildings in different parts of the county but was at home till the middle of June. He lives half a mile from Frank E. Shippen, and his business requires him to travel around Ellijay. He can see a part of Turnip Town Mountain and has seen Bushy Head Mountain and Flat Top Mountain frequently. He has seen nothing during the year (1914) that he considers to be smoke injury. The corn fields are better than usual, and there is quite a quantity of corn and apples, though they had a pretty bad drouth up till the middle of the spring. He has seen no discoloration on the leaves during the year in Gilmer County. He has occasionally seen some smoke in the county, but has not seen smoke of much consequence in Ellijay Valley. He has noticed no injury around Ellijay that he thought was due to smoke (Vol. 2, pp. 1103-4).

He was read what purported to be an interview with a gentleman not living in that section, which appeared in the Atlanta Constitution dated October 27th, and which concludes:

"I have been pretty well over both counties, and

have heard no word of hard times. On the other hand, I have seen unlimited signs of prosperity. The answer to this, of course, is that they raise no cotton but do raise things for which there is always a ready market, and which they can consume at home. The lesson of Gilmer and Fannin Counties is a striking one at the present time,"

and he testifies that he is acquainted with the general condition of the two counties and that the conditions described in the article there prevail (Vol. 2, pp. 1105-6).

J. W. CLAYTON testified with reference to the damage to the Arnold and Northcutt orchards that his principal business in Gilmer County is growing an orchard; he has about four thousand trees, principally apples. Northcutt's orchard is about a mile and a half West of his, and Arnold's is about the same distance but North of Northcutt's. Those three are the commercial orchards in that vicinity. His orchard is eleven years old, and he has given special attention to it. He has seen no damage in his orchard that he could attribute to the smoke. He has some crops and a garden and his vegetation has not been injured by fumes as he could tell. He has had a better fruit crop during the year than usual. If the apples have been damaged in any way he does not know it, except there are some diseases which he did not entirely control by spraying. He constantly reads bulletins from the Experiment Station written by the leading horticulturists of both the Government and his and other states, and has also made observations of the orchards and experimented with his own trees. He was in a portion of Northcutt's orchard four or five weeks before his deposition was taken (November 6th, 1914). He was asked to make the inspection for the defendant by Mr. Reese. He examined it pretty closely. The trees lacked cultivation. The orchard was in a pretty bad condition. It had a considerable amount of leaf spot, or Frog Eye, as it is called, which is caused by a parasite that attacks the

foliage. Both Northcutt's and Arnold's orchards had been cultivated very poorly. They had grown up in weeds as high as one's head. He found some scale in both orchards, but didn't notice it was affecting the trees and fruit very materially. It takes the scale about two years to kill the tree. He did not examine the Northcutt orchard enough to notice it. He also noticed fungi diseases on the fruit, or some black rot and bitter rot, and also a kind of sooty fungus, and some blotch that injures the apples and prevents them from developing. He can't say that he saw any evidence whatever in either of the orchards of injury from smoke fumes. He is not familiar with smoke damage, but did not see anything more than he could account for from other causes.

In 1913 he had six varieties of apples on competitive exhibition at the New York State College at Utica, Cornell University, there being exhibitors from all over the United States, and he took four first premiums and two seconds (Vol. 2, pp. 1050-55).

M. S. CLAYTON also examined the Arnold and Northcutt orchards in 1914 at the instance of Mr. Reese. He has been putting out orchards for the last twenty-five years, and he corroborates J. W. Clayton as to the condition of the two orchards, and says he found no evidence in either Arnold's or Northcutt's orchard of injury from smoke (Vol. 2, pp. 1115-17).

B. H. HOLT, who had charge of the Northcutt orchard for two years, says that he found that Arnold's orchard was in a bad state of cultivation, was grown up in bushes and briers, had not been pruned and had a considerable amount of scale, coddling moth and aphis. It had San Jose scale when he had charge of it eight or nine years ago. The Northcutt orchard was also in bad condition, had been poorly cultivated and was grown up in weeds, briers and broom sedge, and had the same diseases that were found in the Arnold orchard. Both orchards had Frog Eye, from which leaves turn brown and the edges curl up. In examining the orchard he found no evidence of smoke injury

and saw nothing that looked like injury from smoke (Vol. 2, pp. 1093-95).

J. H. QUINTRELL with Mr. Holt took a large number of cuttings from branches of trees growing in Arnold's orchard, which he left with Mr. Reese (Vol. 2, p. 1161). Mr. Reese divided them into three parts, sending one to G. M. Bentley, the State Entomologist at Knoxville (Vol. 2, pp. 1162-3).

MR. BENTLEY testifies that there were thirty-five of the cuttings submitted to him, twenty-four of which were infested with San Jose scale, three of them badly. Some of them had apple leaf rust. When an apple tree is affected with scale it dies from the outer limbs back, the leaves turn brown and the trees shed their foliage early (Vol. 2, pp. 1152-4).

(3) *Blue Ridge, Weaver's Creek, Morganton, Mineral Bluff.*

Some of these places are a considerable distance apart, but the general section in which they are located borders on and is immediately North of the Ellijay region.

PLAINTIFF'S EVIDENCE.

J. M.CARTER says that in the years 1906, '07 and '08 he saw the whole foliage on Blue Ridge burned, and also saw the same condition in his section (Vol. 1, p. 215).

WM. BAILEY lives six miles Southwest from Blue Ridge, near Burnett (Vol. 1, pp. 218-9). He says smoke came in on the 2nd day of June the heaviest he ever saw, which caused injuries to crops (Vol. 1, p. 219). He has a claim filed against the Tennessee Copper Comaany fund, but can't remember the amount of it (Vol. 1, p. 223).

B. H. SEBOLT lives about three miles Northwest of Blue Ridge, on Sugar Creek (Vol. 1, p. 265). He claims that smoke has there a bad effect on vegetables and forests (Vol. 1, p. 265).

JOHN MILLER lives on Weaver's Creek, two miles South of Blue Ridge (Vol. 1, pp. 290-1). He describes very bad conditions, but says he filed a claim for damages for $1,000.00 and received $40.00 (Vol. 1, p. 195).

D. M. BUCHANAN lives near Weaver's Creek (Vol. 1, p. 203). He saw smoke there the 1st, 8th and 13th of June (Vol. 1, p. 204). He thinks timber and gardens have been bit by something (Vol. 1, p. 204), but says there was a drouth that hurt corn, and they hadn't had a good season (Vol. 1, p. 206).

Though witnesses Miller and Buchanan live close together, there is a great difference in their testimony, Miller claiming great damages while Buchanan testifies to very slight injuries.

C. J. TRAMELL lives two miles South of Blue Ridge (Vol. 1, p. 293). He owns eight hundred and forty-two acres. He saw smoke there in May, June and July (Vol. 1, pp. 294-5). He has a suit against this defendant for damages arising in 1906, '07 and '08. He has run a saw mill on his land for twenty years, and fire went through a portion of his orchard two years ago. For six weeks during the year 1914 they had no rain (Vol. 1, p. 301).

J. H. CLONTS was asked while his deposition was being taken to look at peach trees and apple trees and corn, which were growing in view, and he did so, but he said he could see no injuries except something was wrong with one leaf on a nearby tree (Vol. 1, pp. 91-2.)

A. E. SHARPE, Shippen Lumber Company's woodsman, testified to injuries elsewhere, but said he had been in the Blue Ridge two days before his deposition was taken, but had noticed no injury, although it was situated in one of the lowest gaps in the mountains, and is about half way between the furnaces and his home, in the vicinity of which he claims damages had occurred. He further says that three or four years before that the forests around there were all burned (Vol. 1, p. 158).

J. H. TURNER lives a mile from Morganton. He

claims to have seen smoke frequently, and that it has caused much damage (Vol. 1, pp. 246-9). He put in a claim, but received $5.75 or $6.75. He even claims that he has seen sulphur smoke in Pickens County, thirty-five miles away (Vol. 1, p. 252).

J. M. CARTER lives one and one-half miles from Morganton, adjoining the farm of J. C. Addington, the man who raised the prize acre of corn in the year 1913. He claims that smoke was bad there in both 1913 and 1914 (Vol. 1, pp. 208-11), though he lives thirteen and one-half miles from Copper Hill and fifteen and one-half miles from Isabella (Vol. 1, p. 212). He filed a claim for damages and received $30.00 (Vol. 1, p. 213).

L. C. ALLEN lives one and one-half miles South of Morganton on Chastain's farm (Vol. 1, p. 230). He claims to have seen smoke in there many times (Vol. 1, pp. 230-1).

This witness is an example of many of the witnesses who testified for the plaintiff, whose evidence it is impossible to weigh without seeing them upon the witness stand. He is very ignorant, but claims to have kept a record upon an almanac, by making a cross mark opposite the date when anything of importance happened. Thus he claims to have marked the dates when smoke came in there, but there was also a mark opposite a date when he claims a fellow exposed himself before his grand-daughter for which he intended to indict him. There was also another date when a fellow cursed in the presence of his family, for which he was going to prosecute him. It likewise appears that his daughter at times marked dates to refresh her recollection (Vol. 1, pp. 233-4).

A. J. BELL has lived at Mineral Bluff since November, 1913, and before that in Cherokee County, N C. (Vol. 1, p. 278). He tells of a streak a mile or a mile and a quarter in length immediately North of where he lives of which he thinks twenty per cent of the timber is damaged (Vol. 1, p. 278). On cross-examination he says he has been a witness many times against the company,

and that conditions are much improved since the building of the acid plants (Vol. 1, p. 283). He has put in a claim for $10.00 damages (Vol. 1, p. 284).

Defendant's Evidence in Rebuttal.

GRANT ORTEN has lived at Morganton since February, 1913, and farms (Vol. 2, p. 1063). He hasn't seen any smoke injury through there since some seven or eight years ago (Vol. 2, p. 1066).

T. E. GARREN lives in Morganton district (Vol. 2, p. 1067), and is acquainted with the Dora, the Start Creek, Morganton and Mineral Bluff sections. The condition of the forests, fields, orchards and gardens is good. He has been eight or nine miles up the Toccoa River, but hasn't seen any damage which he thinks has been done by smoke (Vol. 2, pp. 1067-8).

J. E. WILSON lives six miles from Copper Hill (Vol. 2, p. 1070). He has a good crop where he lives. He has about six acres in corn, which is fine, and has a good garden. His neighbors' gardens look good from outside appearance, and he sees nothing wrong with the wood lands (Vol. 2, pp. 1070-71).

ROBERT HAMPTON is acquainted with the Morganton, Mineral Bluff and Dora sections. He is in the mercantile business and travels considerably collecting. They have a phenomenal crop of peas, corn and beans and a good crop of apples in those sections, the potato crop was cut short by dry weather in May and June (Vol. 2, pp. 1074-5).

G. M. PANHORST, one of plaintiff's witnesses, says he has been to Blue Ridge and Mineral Bluff a half a dozen times, and the forests look perfectly green, and he has seen nothing to indicate they are in an abnormal condition (Vol. 1, p. 227).

F. T. LARGENT lives twelve or fifteen miles from Copper Hill near North Carolina line (Vol. 2, pp. 1079-80). When he went there three or four years ago he made ten bushels of corn to the acre, and now he raises

sixty-five. A man by the name of Tom Henson took him out to his field to show where he was damaged that he might receive a part of the $16,500.00 Tennessee Company's fund. They found some roasting ears in silk, but he found on examination that a worm had cut the silk off at the cob, and that was what he claimed was smoke damage (Vol. 2, p. 1078).

E. L. STANLEY lives about a mile from Morganton, and knows the conditions within a few miles around that section and also in the Dora and Start Creek sections. He hasn't seen any damage during the year 1914 to the crops, gardens and orchards in these sections which he could attribute to the Ducktown smoke. His neighbors raise the usual crops (Vol. 2, pp. 1080-81).

J. M. DAVIS owns the place upon which witness J. J. Turner lives, four miles East of Blue Ridge on the Toccoa River (Vol. 2, p. 1083), and has there been cultivating corn, potatoes, peas and other garden truck. He hasn't seen a particle of smoke signs on his place, and none of his crops have been injured in any way by smoke, nor has the forest; and in his neighborhood not a single leaf of the forest has been discolored by smoke during the year 1914. He has given attention because there was an appropriation for the damage, and he thought he might as well have a part of it as anybody (Vol. 2, pp. 1083-4).

W. E. ROGERS lives by the side of witness Davis and on lands adjoining the farms cultivated by J. J. Turner and R. H. Smith, witnesses for plaintiff. He owns three hundred acres of land there and raises corn and other grain, and peas, beans, millet, potatoes and other garden stuff. He raises vegetables to sell, and has about three acres in Irish potatoes, a half acre in tomatoes, four acres in melons, an acre or so in early corn and the rest in late corn. His garden is about a quarter of a mile from Turner's garden in a rather Southeast direction. None of his crops of any kind so far as he could tell have been injured during the year. He watched very closely as there was talk about damage, and many were putting

in claims, and he never noticed any discoloration on his garden, fields or forests, "though I watched with all the eyes I had."

His peas were about two hundred yards from the land Turner was cultivating, just a small branch being between his field of peas and the Turner land. He was never over Turner's land, but his garden is right by the side of the public road and he noticed nothing wrong with it. Wilson's corn was the best on that square of ground witness had ever seen there. There was an extremely dry spell in the forepart of the summer and some had short crops. He was present when a number of color photographs were taken by the photographer Thompson, and was shown photographs Nos. 123, 124, 125, 126, 127 and 128, and explains of what they are pictures. These photographs show exactly the condition of the vegetation and forests in that section when they were taken in September, 1914 (Vol. 2, pp. 1087-88).

3rd. PHOTOGRAPHS FILED AS EVIDENCE.

With its proof in chief, in addition to a number of plain photographs and a few color photographs taken by Professor Bain showing the conditions of forests elsewhere than in North Georgia (Exhibits 16 to 21, Vol. 2, pp. 906-7; Exhibits 52-58, Vol. 2, pp. 915-17; and Exhibits 59-64B, Vol. 2, pp. 917-18) and five plain photographs filed by J. H. Quintrell showing the condition of the young growth at and near mine Number 20, there was filed by Professor Bain fifty-three color photographs, of which thirty-three were made of gardens, lawns, orchards, and other views in the Ducktown Basin, many of them in the immediate vicinity of the furnaces (Exhibits 22-51, Vol. 2, pp. 910-14; and Exhibits 79, 83-84, Vol. 2, p. 936) and twenty views showing the conditions of crops and forests in that part of North Georgia which lies nearest to the furnaces and is most exposed to their smoke (Exhibits 1-10, Vol. 2, pp. 898-900; Exhibits 74-78, 80-82, 85-86, Vol. 2, pp. 935-7).

From August 4th to 7th, 1914, J. G. Adams took for plaintiff twenty-five plain photographs, some showing the furnaces and the smoke emitted from the many stacks in the Ducktown Basin, and others landscapes where it is claimed smoke injury to forests existed, and twenty-four of these photographs were filed as exhibits to Mr. Adams' deposition. From September 3rd to 17th thereafter (Vol. 2, pp. 1131-41, and 1164) defendant had J. E. Thompson, an artist skilled in color photography, to travel over the same ground covered by Mr. Adams and also all sections about which any material evidence had been introduced by plaintiff, and take color photographs as far as possible of the same places that had been photographed by Mr. Adams, and of such other views as would reproduce to the Court in concrete form the exact conditions of the forests, fields, gardens and orchards in those several localities; and they were filed as Exhibits to Mr. Thompson's deposition (Vol. 2, pp. 1130-41). The number taken by Mr. Thompson was one hundred and forty-two, being limited only by the number of color plates obtainable. The locality where each was made and the direction of the camera is shown on the map prepared for the use of the Court.

These color photographs are the most reliable and convincing evidence in the record, and that their relative reliability as compared with the plain photographs taken by Mr. Adams may appear, the evidence of Adams, Thompson and Reese relating to the photographs taken by Adams and those taken by Thompson of the same views and views in the same vicinities, is given somewhat extended consideration.

Mr. Adams was employed by Frank E. Shippen for the State of Georgia (Vol. 1, Q. 9, p. 359), and he was accompanied by Mr. Shippen, Mr. A. E. Sharpe, the woodsman of the Shippen Lumber Company, Mr. Vestal and Vestal's son (Vol. 1, Qs. 15-17, p. 395).

Mr. Reese, who accompanied Mr. Thompson, says it was their purpose to make color photographs showing conditions of crops and forests in Fannin and Gilmer

Counties in rebuttal to the evidence introduced by the State. He did not have present Mr. Adams' photographs, as they had already been filed, but he had along a copy of Adams' evidence, and he covered the same territory that was covered by Mr. Adams as much as he possibly could. Except in a very few instances he could not locate the very spots where Adams' photographs were taken, but he tried to locate and have photographed the same ground, and did so as nearly as possible (Vol. 2, p. 1164).

A few of Thompson's photographs, as will hereinafter appear, were undoubtedly of practically the same spots as those photographed by Mr. Adams (Vol. 2, p. 1164).

The evidence of Adams, Thompson and Reese relating to these several photographs is as follows:

Adams' Exhibit No. 1 was made on the Blue Ridge and Copper Hill road about seven miles Southeast of Copper Hill (Vol. 1, Q. 24, p. 360). Adams says that it shows a dead top across the forest and dead and dying trees with leaves on them a lighter shade (Vol. 1, Q. 26, p. 360).

Reese says that he couldn't locate Adams along there, but had some pictures taken of different views along the road (Vol. 2, p. 1169); and Thompson shows that his photo No. 132 was taken on this road ten miles, No. 133 about nine miles, and Nos. 134 and 135 about eight and one-half miles from Copper Hill, while No. 142 was taken close up to Copper Hill (Vol. 2, pp. 1140-1; see location on map).

Adams' Exhibit No. 2 was taken one mile South of Copper Hill looking North (Vol. 1, Q. 27, p. 360), and shows the smoky condition in the distance and the stack of the Tennessee furnace, but not that of the Ducktown furnace, because it was so smoky that it couldn't be seen (Vol. 1, Qs. 28-9, p. 360).

Adams' Exhibit No. 3 is of a view on a hill near Hopewell Church, looking towards Cow Pen Mountain, and he says shows smoky conditions of atmosphere and dead trees and stunted growth. Some of the trees in

the back ground were dead and dying (Vol. 1, Qs. 30-33, p. 360).

Thompson's No. 142 is described as "view of Hopewell Church looking Westward" (Vol. 2, p. 1141), and the arrow on the map shows that the camera was pointing directly towards Cow Pen Mountain. Hence the Thompson photo shows the condition of timber and vegetation there precisely as it was in September.

Adams' Exhibit No.4 was taken from an iron bridge across Fighting Town Creek one quarter of a mile East of Madola, and he says shows dead tops all through there and dead young trees. He also says that certain trees in the foreground were dead and the leaves were brown, which caused them to show light on the photo, and that dark green shows black and white (Vol. 1, Qs. 34-40, p. 361).

This point was easily located, and Thompson took two pictures, Nos. 96 and 97, from this iron bridge, one looking East and the other North, or rather Northwest (Vol. 2, pp. 1138-1142 and map).

Reese testifies that Adams' photographs showed the bridge, and they located the camera at the same spot and made two photographs, one of the view East of the bridge and the other of the view West. There were no indications of dead trees there except old ones. There was no discoloration except No. 96 in the left hand side shows fall tints. He is about fifty years old, is familiar with forests and knows fall tints, and the forests through there usually begin to color in September, turning brown and yellow. He saw absolutely nothing unusual in the forests where this photograph was taken, and it shows how it was for itself (Vol. 2, pp. 1165-6).

Adams' Exhibit No. 5 was taken one-quarter of a mile North of Higdon's Store, lying West of Reddic Mountain near the top, and he says the light colored patches show trees which had died recently, and the outline shows the dead tops which existed everywhere through there (Vol. 1, Q. 41, p. 361).

On cross-examination it was suggested to the wit-

ness that what he claims to be dead trees are but white splotches on the photograph, having no distinct outline, and hence could not have indicated dead trees, but he claims that they look like well defined trees to him. He says the leaves were nearly white, slightly yellow, but not brown, rather a light tan. He has no idea what tanned the trees, or made them light, nor can he tell the variety, but thinks there was oak, pine and hickory there. He is then asked: "Maybe they (the white splotches) were the result of the development, and not the result of the brown or white or yellow leaves at all?"

"A. I couldn't tell you" (Vol. 1, pp. 384-5).

Thompson's photographs Nos. 104 and 105 were both taken on Ducktown Road, about a quarter of a mile North of Higdon's Store, one looking Westward and the other Southward (Vol. 2, p. 1138).

Reese says that these pictures were taken where Adams took a picture, and he made notes of the conditions when he was on the ground, and No. 104 shows some dead trees which had been dead for many years, and there were also in the landscape a few trees with yellow leaves which apparently had died from drouth. He is familiar with smoke injury and also injury from drouth, and knows that drouth will kill trees, and these trees did not have the appearance of having been killed by smoke fumes, but by drouth. This place is about six miles from Copper Hill and eight or nine from Ducktown. There was no evidence of smoke injury in the landscape appearing in photograph No. 105. There is a dead tree about the center, but he thinks it was killed by lightning or drouth, though he did not examine it (Vol. 2, pp. 1168-9). Thompson's photograph No. 106 was taken at Higdon's Store, and shows a perfectly healthy condition of a corn field and forest (Vol. 2, p. 1138).

Adams' Exhibit No. 6 was taken on Barnes Mountains, ten miles Southwest of Ducktown, and he says it shows dead tops of trees and dying trees, though it was

made under adverse conditions and is not plain (Vol. 1, Qs. 43-5, p. 361).

Adams' Exhibit No. 7 was also taken on Barnes Mountain, looking Southeast (Northeast). It was intended that the stack of the furnace should show in the photograph, but he says it does not appear on account of the smoky condition of the atmosphere (Vol. 1, Qs. 47-9, p. 361).

Adams' Exhibit No. 8 was taken on Barnes Mountain looking East, and he says it shows a mountain some distance away and dead trees on it.

Adams' Exhibit No. 9 is another view taken from Barnes Mountain looking East on the same section of land as No. 8, and witness says it shows dead and dying timber and dead tops of trees (Vol. 1, Qs. 52-6, pp. 361-2).

On cross-examination, especially with reference to picture No. 9, witness says that he has no idea what killed the tree on the left hand side of the picture. It was old and the bark was off. There are a number of other trees shown to be stripped of foliage. He doesn't know how long they have been dead, but some of the smaller twigs had died recently (Vol. 1, Qs. 142-144, p. 376).

He has no definite recollection independent of the picture about the location of trees appearing in the picture which he claims were dying. He doesn't think he is merely guessing as to their location, but he says the trees which appear light show the dead and yellow leaves, some of the leaves being almost white. (The witness had previously testified that yellow showed very dark in the picture) (Vol. 1, Q. 107, pp. 373-4; Qs. 151-156, p. 376).

Thompson took photographs Nos. 98, 99, 100, 101, 102 and 103 on and about Barnes Mountain (Vol. 2, p. 1138).

With reference to these several photographs and the conditions on Barnes Mountains, Reese testifies that No. 98 shows the condition existing there in September, that there was absolutely no indication whatever of any

smoke trouble, that as well as he could get at it Adams had taken photographs where they took that one, that he read Mr. Adams' evidence, and went as near as possible to the identical places, and tried as nearly as he could to take the pictures on the same ground, and that photograph was taken for the purpose of duplicating as nearly as possible the photograph of the place taken for the State of Georgia; that No. 99, a view of a meadow in the foreground and Barnes Mountain in the back ground shows Barnes Mountain where the Vestal crowd took views claiming smoke damage, and he doesn't think there was any sign of smoke injury around or on that mountain, but the picture answers for itself; that No. 100 was taken looking towards Barnes Gap, on Barnes Mountain, and shows a house in the foreground and corn field and quantity of trees killed by girdling in the center of the picture; but that these trees showed that they had been killed by an axe girdle for the purpose of clearing the ground for cultivation; and he didn't see a bit of evidence of smoke injury in that vicinity (Vol. 2, pp. 1166-68).

Adams' Exhibit No. 10 was taken a little West of Flat Top, and shows the hazy or smoky condition of the atmosphere (Vol. 1, Qs. 54-60, p. 362).

Adams' Exhibit No. 11 was taken on West side of Barnes Mountain looking Southwest. He says it shows large trees which had just recently died, some entirely and some just the tops (Vol. 1, Qs. 61-3, p. 362). On cross-examination he says the color of the smaller trees in the near foreground were either light green or dark green, very shiny. They caught the light and threw it up. He cannot say that all of them were in a perfectly healthy condition; some were not, but he is unable to point out those that were unhealthy. The foliage which shows the lightest in the picture was indicated to him, and he testifies that most of those leaves were green, and the reason they showed light in the picture was that they reflected a good deal of light (Vol. 1, p. 374).

The witness had claimed on examination in chief

that the photographs could be relied on as showing dead leaves because such leaves appeared light in the photograph.

Adams' Exhibit No. 11 and Thompson's photographs Nos. 102 and 103 must have been taken about the same place (See Map).

Adams' Exhibit No. 12 was taken on Pigeon Mountain, Northeast of Blue Ridge. He says it shows a number of dead and dying trees, indicated by the light blotches (Vol. 1, Qs. 64-7, pp. 362-3). But he was shown in the picture some bushes in the foreground which show up light, and he says they had shiny leaf surfaces like laurel, and nothing was wrong with them that he knew of (Vol. 1, p. 383). And he admits that on the right hand side there are many green leaves which show some light and some dark, and with reference to the smoke drifting up the valley he says he couldn't tell whether it was smoke or fog, as smoke drifting that way looks like fog (Vol. 1, p. 390).

Adams' Exhibit No. 13 was taken looking at Granny Marr Mountain a little South of the Crest, and he says that it shows dead and dying trees, a number having died recently (Vol. 1, Qs. 69-70, p. 363).

Thompson's No. 93 was taken looking West and shows Granny Marr Mountain (Vol. 2, p. 1138).

Reese testifies that No. 93 shows the Granny Marr Mountain where Adams had taken some photographs; that where it was claimed by Mr. Adams there was discoloration of the forest there was nothing particularly wrong except possibly some fall tint on the foliage, and that he did not observe a thing wrong about the appearance of the forest for that season of the year; and that the condition of the forest is correctly represented by Thompson's photograph (Vol. 2, p. 1166).

Adams' Exhibit No. 14 was taken from the top of Granny Marr Mountain looking towards the furnaces, and shows the smoky condition of the atmosphere (Vol. 1, Qs. 70-75, p. 363).

On cross-examination he testifies about this picture

that it doesn't show the Ducktown plant or any smoke issuing from it because the air was too dense with smoke, that there were stacks to the power house which emit smoke, and he could see smoke in several places, some of it being black coal smoke; that the smoke that comes out of the furnaces has the lightest color of any smoke in the Basin; that one could see the smoke rising up in the Basin, and probably the smoke from all the stacks got together and produced a haze over the Ducktown Basin, or helped to do it. He lives in Atlanta, and has seen at times so much smoke that came from the stacks of the manufacturing plants that he could hardly see across the street, and has seen the time when he couldn't get a good photograph even by long exposure of a house across the street (Vol. 1, pp. 278-9).

Adams' Exhibit Nos. 15 and 16 were taken on Tumbling Creek. No. 15 he says shows dead and dying timber and No. 16 some large timber dead (Qs. 76-81, pp. 363-4). With reference to No. 15 he says that there are some bushes in the foreground which show light in the picture that had green leaves. He thinks they were in a nice healthy condition, and that the same was true with reference to some trees in the foreground in No. 16, especially on the left hand side (Vol. 1, p. 383). There were quite a number of trees which show up white in the foreground in No. 15, nearly all the leaves of which were green. These were intermingled with other green leaves which show up dark. There were may trees exactly the same color, some of which show up dark and some light. A shiny leaf reflects the light at certain angles, whether in the background or foreground (Vol. 1, pp. 389).

Adams' Exhibit No. 17 was taken within a quarter of a mile of Exhibit 16, and he says it shows dead and dying timber, two trees where light places are shown being dead (Vol. 1, Qs. 81-3, p. 364).

Adams' Exhibit No. 18 was taken from Burnt Store Church, three and one-half miles from the Ducktown plant. It shows thick smoke settled all through the

country. The vertical black streak on the right is a defect in the plate (Vol. 1, Qs. 83-8, p. 364).

Thompson's photo No. 90 was taken at the same place and looking in the same direction, and shows the Tennessee plant at right, Ducktown plant at left, and Pack Mountain in the distance (Vol. 2, p. 1137). There was certainly not sufficient smoke existing at that time to interfere with the taking of a color photograph.

Adams' Exhibit No. 19 was taken near Hopewell Church, looking East about two to three miles from the plant, and shows smoke of all kinds as it drifts into Georgia.

Thompson's Exhibit 142 was taken at the same place (Vol. 2, p. 1141). In this picture the camera was turned Westward, as it was thought to be more important to know the condition of the forests and vegetation there than to see how much smoke produced in the Basin at some particular moment drifted into Georgia.

Adams' Exhibits Nos. 20 and 21 are of the Ducktown plant, and No. 2 shows the barren soil South of the plant. No. 23 was omitted because a duplicate of No. 24 and Nos. 24 and 25 are views of the Tennessee plant (Vol. 1, p. 366). The photographer was only about fifty yards distant from the Ducktown plant when it was taken, but was about a quarter of a mile from the Tennessee plant when it was photographed (Vol. 1, p. 381); hence the Ducktown plant shows up much larger than the Tennessee plant. Photograph No. 2 in addition to the barren soil also shows trees and bushes; and when asked to point out any part of the foliage that was killed he answered: "I don't know that I can point out any at all, but I know that some of the smaller bushes are dying," and he indicated one by a house, which he thought was dead, but admitted that the picture does not show it. This picture shows quite a scope of country lying South of the Tennessee plant, and while he claims that some of the trees appearing in the picture were not in a healthy condition, yet he admits that the picture does not show them to be

unhealthy, because he says it was made when the sky was overcast with clouds (Vol. 1, p. 375).

Mr. Adams' photographs can be of no material value. Such photographs show truthfully trees which are dead and stripped of their foliage, but it is not denied that there are dead trees and trees with dead tops in the forests photographed. However, defendant does deny that any trees or tops of trees in those localities have died from smoke fumes within the last four or five years, but such denial cannot be contradicted by the photographs. As to whether or not the foliage of trees was browned Mr. Adams shows conclusively that these photographs are wholly unreliable. Whether a leaf will show dark or light in the photograph depends not only upon its color, but also upon the character of its surface and its position to the rays of the sun and camera. In showing the presence of smoke in the atmosphere no contention of defendant was contradicted. The sulphur fumes are the lightest in color of all smoke, and there are more than twenty stacks in the Ducktown Basin, most of which emit heavy black smoke (Vol. 1, p. 418).

An attempt was made to show by this witness that color photographs do not reproduce colors truthfully; but he shows the densest ignorance of color photography. He appears to think that separate plates are used, one for each color, and then by some means a composite is made of them all (Vol. 1, pp. 369-70, and 386); and he says that it would require nearly a day to take a parrot in colors, and many weeks and months to get a picture showing the colors of a garden which contains a number of flowers. He is asked:

"Then if there has been filed in this case, fifty or one hundred photographs showing the coloring of all the flowers and vegetables in gardens, that fellow must have worked a hundred years?

A. I suppose so, if he made it by photography" (Vol. 1, pp. 390-91).

He knows nothing about the science of photography,

and shows he has no knowledge of the reflection of light from surfaces of different colors (Vol. 1, pp. 372-3).

Mr. Thompson testifies that these photographs speak absolutely true to nature (Vol. 2, pp. 1146-7).

4th. Timber in North Georgia has been killed by fires, worms and other causes, to which forests are usually incident.

It is shown that there are many saw mill sites in the forests of North Georgia, and that considerable portions of it have been cut over by lumber men. In logging the body of the tree is removed, and the laps are left lying in the woods, surrounding other timber, and are ready fuel for forest fires, greatly adding to the intensity of their heat and making them far more destructive to the standing timber. There is much evidence of timber in the forests of North Georgia having been injured in this way (Sherman Reese, Vol. 2, pp. 634-5; W. G. Payne, Vol. 2, pp. 709-10; L. A. Hughes, Vol. 2, p. 719; J. A. Miller, Vol. 2, p. 726; R. A. Shiflett, Vol. 1, pp. 480-81).

With reference to other causes of injury Professor Bain says that in many instances it is impossible to distinguish smoke damage from drouth, and a botanist approaches the determination of the cause of any injury rather by elimination of injuries known to be due to natural causes.

For instance, in the case of the maple, a specimen of which he noticed was affected by some disease; its foliage being one of the most resistant species to the action of the smoke, and other plants decidedly more sensitive being with it and not damaged, it was safe to say that the maple was not injured by smoke fumes. A leaf injured by smoke is at first brown, some in spots, and then the spots become white, and as to pines and other conifers the tips of the leaves become slightly pale in color, then redden and then brown; but in many instances other diseases give the same appearance to the casuel observer. He files as Exhibits Nos. 11 and 12 leaves which had been affected by drouth but had very much the appearance of having been injured by smoke (Vol. 2, pp. 901-

2), and he files as Exhibit No. 13 a specimen that came from the top of Chilhowee Mountain in Blount County, Tennessee, eighty miles from the furnaces, which is affected in the same way (Vol. 2, p. 902). These leaves were all affected by the want of moisture, and the same effect results from forest fires or diseased roots or anything that prevents moisture from reaching the leaves through the fibres of the tree (Vol. 2, pp. 902-3). He also files as Exhibit No. 14 a specimen of leaves of white pine affected with leaf tip disease which first appears on the tips of the leaves and is very similar to the effect of smoke (Vol. 2, pp. 903-4). This leaf was taken eleven miles from Copper Hill and fourteen from Isabella; and he files as Exhibit No. 15 another specimen affected with the same disease and obtained nineteen and one-half miles from the Ducktown furnace; and he says he found specimens of the same disease in Sevier County, Tenn. (Vol. 2, p. 904). In many instances by inspection it is impossible from an examination of isolated specimens to tell whether an injury has resulted from smoke fumes or from frost. If the specimen could be gotten soon enough after the frost action it could be told from microscopic inspection, as the frost freezes the water in the cells and ruptures them (Vol. 2, p. 945).

He saw evidence of there having been fires through that section of North Georgia. There were scalded trunks of trees, and occasionally tracts where the trees were burned over and dead, and fires are likely to kill the small growth (Vol. 2, pp. 907-8).

On cross-examination he stated that a North Georgia forest would show up badly in comparison with a healthy forest, but he explains that he meant a forest properly cared for, that had not been attacked by fires, which had not been mismanaged, and over which improper lumbering had not been conducted (Vol. 2, p. 964).

5th. Forests elsewhere are in a worse condition than are those in North Georgia, and contain more dead and dying timber.

PROFESSOR BAIN made a special examination of forests in Sevier and Blount Counties, Tennessee, and Mitchell and Yancey Counties, North Carolina, all in the Allegheny Mountains, and through Morgan, Putnam and a number of other Tennessee Counties in the Cumberland Mountains and on the Cumberland Plateau. He testifies that the conditions in Sevier County, Tennessee, were about the same as in Georgia, but that the leaf tip disease on the pine is especially marked at Elkmont, Sevier County. He also found trees in the same condition in Blount County (Vol. 2, p. 905). He found trees known as the nigger pine dying much more from the attacks of a beetle in Blount and Sevier Counties than in Georgia, and saw more dead pines on the trip through those counties in five miles than he saw on the whole trip in Georgia, but he thinks there has been greater destruction by fire in North Georgia than in the high mountains in Sevier County; and leaving fire out of consideration he recognized more diseased timber in Blount and Sevier Counties than in Georgia (Vol. 2, pp. 905-6).

He took six color photographs showing the conditions of timber in Blount County, Tennessee, and files them as Exhibits Nos. 16 to 21 of his deposition. No. 16 shows two nigger pines freshly killed by the beetle. No. 17 shows a birch tree with a dying top. He didn't find much of that condition in North Georgia on birch, but did on chestnuts. No. 18 shows two white pines in Sevier County dying with exactly the same symptoms as were trees he observed in North Georgia. No. 19 shows a white pine dying of the same symptoms, and in that group he saw twelve pines in a dying condition, with a hemlock in a perfect state of health. No. 20 is a view of a mountain slope in Sevier County at an altitude of thirty-five hundred to four thousand feet taken to show a forest in good condition. No. 21 shows a chestnut tree in Sevier County with the top dying from lack of water caused by forest fires or improper lumbering (Vol. 2, p. 907).

He took seven plain photographs, which he files as Exhibits 52 to 58 (Vol. 2, pp. 915-17) to his deposition, of views in the Cumberland Plateau region of Tennessee, and seven views in Western North Carolina along the Carolina, Clinchfield & Ohio Railroad, which he files as Exhibits 59 to 64B (Vol. 2, pp. 817-18). The points photographed are far removed from these or any other furnaces of like character.

The conditions of the forests in Tennessee and North Carolina as shown by these photographs are incomparably worse than any landscape in North Georgia shown by any photograph filed by either plaintiff or defendant. Comparing the conditions of forests in North Georgia with those through the sections in Tennessee and North Carolina which he examined, the witness says that, judging from the existence of recently dead trees and the standing dead timber, the conditions of the forests in North Georgia are healthier than it is in many of the sections in Tennessee and North Carolina. For instance, going from Johnson City to Altapass, for a few miles the forest is in a relatively good condition, but sections were then observed where the trees were dying on a large scale. In the Cumberland region white pine, hemlock and chestnut are on a whole in a decidedly worse condition than they are in the region of North Georgia (Vol. 2, p. 919).

A number of gentlemen, among whom were witnesses J. M. Senter, G. C. Parks, Sherman Reese, M. T. Fouts, C. G. Baugh, L. A. Hughes, J. A. Miller and R. A. Shiflett made a trip of inspection through parts of Anderson, Rhea, Morgan, Scott, Overton, Fentress, Putnam and probably other counties in the Cumberland Mountains and on the Cumberland Plateau in Tennessee. Mr. Shiflett, who has had much experience in inspecting large boundaries of timber independent of this trip and is very familiar with large sections of forests in East Tennessee and in parts of Eastern Kentucky and Western North Carolina, says that conditions of timber in North Georgia are far better than they are

in Tennessee. There was less dead timber there than he observed hundreds of miles away from the furnaces in Tennessee and Kentucky and North Carolina. The percentage of dead timber in Yancey and Mitchell Counties, North Carolina, and Whitley County, Kentucky, is greater than in North Georgia. There is a great deal of dead hemlock in the counties of Tennessee, Kentucky and North Carolina through which he traveled (Vol. 1, p. 476). In some places it is nearly all dead (Vol. 1, pp. 476-7). In Georgia he found a good deal of hemlock in the smoke zone and some beyond that zone. Some had been cut down and manufactured into lumber and some of it was dying, as on Jacks River, but not as rapidly as in the counties of Tennessee; and he is positive that he saw no hemlock on Jacks River dying from smoke fumes (Vol. 1, p. 477). The chestnut is dying in the counties mentioned of Tennessee and North Carolina, but he saw very fine bodies of chestnut in the Jacks River country and on the East slope of Cow Pen Mountain, and while on his inspections in 1912 and '13 he saw no evidence of smoke damage to chestnut in North Georgia (Vol. 1, p. 478). He saw more fine bodies of oak in North Georgia than anywhere else except in Polk County, Tennessee. The best he saw was near Higdon's place on Fighting Town Creek, ten or twelve miles from the furnaces. On his travels he saw no damage to oak timber outside of the smoke limit near the furnaces, where it is nearly all cut out (Vol. 1, p. 479). The white pine they found in North Georgia on their inspection trip was thrifty, and he saw no evidence of smoke upon it, though it is especially susceptible. In the counties in Tennessee through which they passed they found the greater part of the white pine dying. The general condition of the forests in North Georgia was far better than that of other forests through which he has traveled, except in Harlan County, Kentucky, where the conditions are about the same (Vol. 1, p. 483).

As to the comparative conditions of the forests generally in North Georgia and in the Cumberland Moun-

tains and on the Cumberland Plateau in East Tennessee, Professor Bain and Mr. Shiflett are fully corroborated by J. M. SENTER (Vol. 1, p. 584); G. C. PARKS (Vol. 1, p. 591); SHERMAN REESE (Vol. 2, pp. 634-5); M. T. FOUTS (Vol. 2, p. 641); C. G. BAUGH (Vol. 2, pp. 686-7); L. A. HUGHES (Vol. 2, p. 719); J. A. MILLER (Vol. 2, pp. 725-726).

W. G. PAYNE says he has made several trips West, and has hunted in the Rocky Mountains and in the mountains of Arkansas and Missouri. He has also been through sections of Virginia, Kentucky and South Carolina, and was with the party that made an inspection trip through North Georgia, and he testifies that with the exception of forest fires on Cobb Mountain the North Georgia section is as green as the witness has seen in twenty years. There is of course some dead timber there. The loggers leave the brush piled up against trees and fire will kill a good deal of timber (Vol. 2, pp. 707-9).

III.

Whatever injuries are now, or have been for the last five years, done by sulphur fumes to the forests, crops, gardens and all other forms of vegetation in North Georgia, are being and have been produced by smoke escaping from the plant of the Tennessee Copper Company, and not by the smoke emitted by the furnaces of this defendant.

On the original hearing no separate defense was made by this defendant. The defenses especially relied upon were the want of jurisdiction of the Court, and that an injunction would not lie in this character of case. These defenses were presented by the defendants jointly, and it was not attempted to show which of the them was responsible for the poisonous fumes that drifted into the State of Georgia.

Now the attitude of the defendants is altogether different, and these changed conditions have been brought about very largely by the State of Georgia. Hereafter it will be shown how, immediately

after the decision of this Court, W. H. and Frank E. Shippen, President and Vice-President, respectively, of the Shippen Lumber Company, mainly by whom, according to their own representations, the State of Georgia was induced to bring this action, began to negotiate with the Tennessee Copper Company for a settlement, and how that company not only purchased a perpetual easement to float smoke over the lands of the Shippen Lumber Company, but secretly became its largest stockholder. But the more important fact in this connection is, that if the two defendants ever could have been considered as jointly liable for this alleged nuisance, the State of Georgia has itself separated them by negotiating an agreement with the Tennessee Copper Company whereby, for a money consideration, it has waived for a definite period of time, all right it may have as to that company to demand a final decree. Hence the State of Georgia now bears one relationship to the Tennessee Company and another to this defendant. It has bargained away its right to enjoin the Tennessee Company from emitting smoke, but demands an injunction prohibiting this defendant from doing *precisely the same thing*.

The question, therefore, which the Court is specially inquiring into is whether *this* defendant is *now* doing substantial injury to the domain of the State of Georgia, and not whether, in 1906 and '07, its domain was being injured by either one or both the defendants, regardless of the one doing the injury, which was the question then decided.

In determining that question every fact which may materially aid the Court in reaching a correct conclusion may be looked to, regardless of whether such fact occurred or existed before the original hearing in 1907, or has occurred or come into existence since that date.

The following facts show that, if any substantial damages are, or for a number of years have been produced in the State of Georgia by sulphur fumes, those fumes escaped from the furnaces of the Tennessee Cop-

per Company, and not from the furnace operated by this defendant.

1st. The relative locations, construction, capacities and operations of the two furnaces.

(a) *The location of the Tennessee furnace is more favorable for the transmission of smoke into Georgia than that of the Ducktown Company.*

The Tennessee furnace is located a quarter of a mile from the Georgia line, while the distance between the State line and defendant's furnace is two and one-half to three miles (See W. F. Naughan, Vol. 1, p. 559; see also map). Between the Tennessee furnace and the State of Georgia there are no intervening hills. On the other hand, the stack of defendant's furnace is sixteen hundred and eighty feet above sea level, and there is a chain of hills immediately South of the plant from seventeen hundred and eighty-three to eighteen hundred feet above the sea, or more than one hundred feet higher than the stack (Bowron, Vol. 2, p. 776). Lamoreaux files as Exhibit No. 4 a profile of a vertical plane runing North and South through the Ducktown furnace, which shows the height of the hills and of both the furnace stacks (Lamoreaux, Vol. 2, pp. 806-9).

Again: Smoke naturally follows water courses, probably because as streams pass through the lowest gaps air currents move up and down them (Lamoreaux, Vol. 2, p. 809; Reese, Vol. 2, pp. 632-4). The Tennessee furnace stands near the banks of the river, and naturally its fumes drift up the river into Georgia or down the river into Tennessee, according to the direction of the air current. But as to the smoke from defendant's plant, Mr. Bowron says that it would have to be drawn down Potato Creek and go over some hills or pass through the low places probably seventeen hundred feet high, and then down to the Davis Mill Creek section in order to reach Georgia along a water course; and according to his observation it does not get even to Copper Hill (Vol. 2, pp. 777-8). Reese says that the smoke will go further up Toccoa River than any other direction

into Georgia, and for the smoke of the Ducktown plant to reach Georgia along a water course it would have to drift down Potato Creek to the Toccoa River and then back up the river a reverse course, and from his observation the smoke does not do that. The creek is very crooked, and it is three or four miles from the plant to its mouth (Vol. 2, pp. 633-4).

Furthermore, according to Bowron it matters but little whether the wind is blowing or not, as the current is above the top of the hills, and there are local conditions in the little valleys underneath, which control the smoke. For illustration, he saw smoke from burning brush heaps drifting Eastward when the wind was blowing Northwestward, and he says the fumes from the Ducktown plant are broken up when they strike the hills and settle in the Basin (Vol. 2, p. 793).

(*b*) *The construction of the Tennessee furnace is more favorable for the transmission of smoke into Georgia than is the construction of the Ducktown furnace.*

The top of the stack of the Tennessee furnace is three hundred and twenty-five feet above the base, or about eighteen hundred and eighty-five feet above sea level, while the top of defendant's stack is seventy feet above the base and sixteen hundred and eighty feet above sea level (W. N. Bowron, Vol. 2, p. 776). Therefore, the Tennessee stack is two hundred and five feet higher than defendant's. Lamoreaux says the Tennessee stack is approximately a hundred and ninety-five feet higher than defendant's stack (Vol. 2, p. 796). Their relative heights are also shown by the profiles filed as Exhibits 2, 3 and 4 to Lamoreaux's deposition. This high stack was completed by the Tennessee Company in 1906 (Shiflett, Vol. 1, pp. 470-1; Lamoreaux, Vol. 2, p. 796). Reese says the height of the stack of the Ducktown Company has been about the same ever since it began operations in 1891 (Vol. 2, p. 1007). The Tennessee stack is made of fire brick, and is twenty feet in diameter, and the fumes retain much of their heat until they reach the top of the stack, while defendant's stack is seven feet in diameter

and made of sheet steel, a thin metal which has a cooling effect all the way up (Bowron, Vol. 2, p. 776). As sulphur dioxide is 2.2 heavier than air at the same temperature (Bowron, Vol. 2, p. 790; Lamoreaux, Vol. 2, Q. 56, p. 810), it is certain that it can never rise high above or float a great distance from defendant's furnace; and if smoke has been seen floating from its plant into the State of Georgia it was coal smoke from its power house, and not sulphur dioxide from its furnace.

Mr. Lamoreaux says that when a light wind is blowing to the South the smoke breaks off directly with the top of the stack, never rising above fifteen feet, and it then first encounters the tall acid chamber which is higher than the stack, and is broken up (Vol. 2, Q. 79, p. 816).

(*c*) *The capacity and amount or ore consumed by the Tennessee plant is far in excess of that of this defendant, while this defendant's acid plant has greater relative efficiency.*

The Tennessee Company has seven furnaces, while defendant has only two, and but one is operated during the growing season (Lamoreaux, Vol. 2, pp. 802-3; Naughan, Vol. 1, pp. 562-3). On the other hand, the acid plant installed by defendant is relatively far more efficient than the acid plant of the Tennessee Company. When the Tennessee acid plant was installed in 1908 it was not a success because its estimated capacity was only four hundred tons of sulphuric acid per day, but it never succeeded in producing that amount, and did not, in fact, have one-fifth capacity to take care of the sulphur dioxide in the smoke. It is now claimed to have a capacity of twelve hundred tons, but that is not sufficient to take care of the smoke now produced. Because of its failure to operate successfully the Tennessee Company employed additional consulting engineers, and the transformation from the smaller into the present large unit began about three years ago, and was completed something like two years ago (Lamoreaux, Vol. 2, p. 820). J. H. QUINTRELL says the Tennessee Com-

pany installed its acid plant in 1908, first building two chambers. The next year (1909) they made an addition and year before last (1912) they made another addition, and for the last two years they have been operating six chambers (Vol. 2, pp. 755-6).

When Bowron visited the Tennessee plant in 1910 the acid plant was largely under construction, and it was taking care of only from one-fourth to one-third of the sulphur (Vol. 2, pp. 771-2).

Reese files as Exhibits 1-9 of his deposition photographs which show defendant's acid plant in various stages of construction. These pictures are explained by Reese, and the magnitude of the acid plant readily appears therefrom.

The efficiency of defendant's acid plant as compared with the capacity of its furnace has been heretofore considered in showing the extent of the improvements made by defendant since the decision of this court in 1907.

(*d*) *The ore used by the Tennessee Company contains a higher per cent of sulphur than that smelted by defendant, and in smelting a larger per cent of sulphur is extracted from the ore and emitted into the atmosphere.*

Mr. Lamoreaux details at length defendant's method of analyzing its ores, which shows that it is done with great particularity and accuracy (Vol. 2, p. 801); and after giving the per cent of sulphur contained in the ore taken from each mine, he says the sulphur in the total ore used averages about fifteen per cent (Vol. 2, p. 800); and while he cannot state precisely the per cent of sulphur contained in the ore smelted by the Tennessee Company, yet he mentions the character of their mines, and testifies that it is quite in excess of that smelted by defendant (Vol. 2, p. 802). Furthermore, defendant only manufactures copper matt, which is twenty-five per cent sulphur (Vol. 2, Q. 37, p. 799); that is, a very considerable part of the sulphur remains in the product which is shipped away. But the Tennessee plant produces copper pig, which is 99.5

per cent pure copper, the remainder being oxygen and a small amount of gold and silver. Hence all the sulphur is eliminated from the ores at the Tennessee furnace. And up to four years ago the Tennessee Company purchased from defendant its product, and refined it to blister copper, thus eliminating in its plant the twenty-five per cent of sulphur contained in the matt (Vol. 2, pp. 798-9).

(*c*) *This defendant has exercised far more care to avoid the emission of fumes than has the Tennessee Company.*

The course pursued by this defendant since the decision of this Court in 1907 is stronger evidence of intention to faithfully comply with the rule of law then declared than is the course pursued by the Tennessee Company. This defendant at once began to experiment in order to perfect improvements that would unquestionably prevent any material injury from ever being done in the State of Georgia by fumes escaping from its furnace. While it appreciated the postponement of a final decree, yet it made no dicker with either plaintiff or any party who claimed to be an instigator of the litigtaion. But, as heretofore stated, the Tennessee Company at once began negotiations to purchase peace with the Shippen Lumber Company, which was by far the largest landholder in North Georgia, and has since entered into a contract with the plaintiff to pay $16,500.00 per annum for three years for the privilege of continuing to operate its furnaces and permit its smoke to float into Georgia. As it has purchased these privileges, its exercise of care in operating the plant is naturally not so great.

But there is positive proof that the Tennessee Company has not exercised due care in its endeavors to prevent an emission of fumes. Mr. Bowron makes a comparison between the methods of operation, when he was sent there on a trip of inspection in 1910 by the Gov-

ernor and Attorney General of the State of Georgia. He was asked: "What was the working condition of the two plants as compared with each other, as to whether they were good, bad or indifferent?"

A. "The Tennessee Copper Company's, it was working fairly well, and in normal condition at the time of my visit. With the other plant at Isabella, it was working just absolutely perfectly. Mr. Hatch, the architect of the plant, was in charge of it, and showed me over it. It was in perfect working condition" (Vol. 2, Q. 28, p. 772).

He further says that this defendant had no knowledge of his presence in the District.

Mr. Reese testifies that when he is at home he sees the stack of the Tennessee Company two or three times a day, and when it is operating there is never a time when fumes are not being sent out in volume from the top of the stack (Vol. 2, pp. 979-80).

In other sections of this brief there is cited the evidence of witnesses who testify that the smoke observed by them came from the Tennessee furnaces.

(*f*) *In consideration of all the foregoing facts it is the opinion of the experts that no damage can be done in the State of Georgia by fumes escaping from defendant's furnace.*

Mr. Bowron says that "I will unhesitatingly say that it is practically impossible for the operations at Isabella to affect the State of Georgia in any way" (Vol. 2, Q. 82, p. 772).

Dr. McCandless is asked as to the possibility or probability of the operations of the Ducktown Copper Company as normally carried on exerting any harmful

effect on the forests and gardens in Fannin County, Georgia, and answers: "I think it is an impossibility, absolutely impossible for it to have any effect" (Vol. 2, Q. 24, p. 837).

Professor Bain says that from a study of the situation he does "not believe that the company (Ducktown S. C. & I. Co.) is at present doing any damage in the State of Georgia;" and he does not believe that under similar conditions any damage could result to the forests and other vegetation in the State of Georgia (Vol. 2, Qs. 221-30, pp. 966-7).

When asked from his observations to state from which of the furnaces the damages have resulted for the last four or five years, Mr. Shiflett says that if there has been any damage at all, "it must have come from the Tennessee Copper Company's plant." It smelts more ore and the stack is higher by a hundred feet, and the smoke would carry to a greater distance into the mountainous section, and it is three miles nearer the Georgia line (Vol. 1, pp. 498-9).

Mr. Gilchrist says if there was damage to the vegetation in Georgia it must be the other (Tennessee) furnace, which is nearer, that is doing it (Vol. 2, p. 825).

In striking contradiction to the opinions of these experts is that of Dr. Hedgecock, who in response to the inquiry to which plant he attributes the damage in the forests through which he traveled, said:

"I would attribute the greater part to the Ducktown plant and a minor part to the Copper Hill plant, until you get high up on the mountain, when you get to the top of the mountain it would be hard to say, on the high mountains" (Vol. 1, Q. 101, pp. 16-17).

His theory is that the smoke from the stacks of the two furnaces floats horizontally until it strikes some hill or mountain, and as the stack of the Ducktown furnace is much lower than that of the Tennessee furnace, its smoke does the damage on the hills and the lower parts of the mountains. This, however, does not ex-

plain why he thinks the Ducktown furnace is equally responsible for the damage to forests on the high mountains. Clearly the witness does not take into consideration the fact that there is an intervening ridge between the State line and the Ducktown plant which the smoke from that furnace would first strike, and the further fact that as sulphur dioxide is 2.2 heavier than air it must necessarily descend to the earth soon after its emission from the stack.

That smoke will so descend is shown by Mr. Panhorst, who was introduced by plaintiff. He had testified that there was fine corn growing about a quarter of a mile from the Tennessee plant, and in an effort to show that this corn was not injured because the fumes from the Tennessee stack passed over it, he was asked:

"And naturally if the wind was blowing, it would go over that corn field?

A. In some cases it would and in some it wouldn't. I have seen the smoke from that stack when the atmosphere was heavy, go almost down on the plant.

Q. But under ordinary conditions it would blow away?

A. That would depend on the atmospheric conditions" (Vol. 1, p. 228).

Attention is also again called to the testimony of J. H. Quintrell, previously cited, who says that on June 8th he saw the smoke from this high stack striking the ground from five hundred to a thousand feet from the furnace.

On cross-examination, with reference to this statement, the witness, Hedgecock, was asked:

"Q. 143. Now, Doctor, do you say that the Tennessee plant, that is the plant of the Copper Hill Company, could not have done that damage? (Referring to damages on Barnes Mountain and elsewhere testified to by the witness).

A. Because the smoke carries too high, ordinarily. I admit that it might drop down nearer and do some damage.

Q. 144. Then you admit it might have done it?

A. It might have done it. I said it wasn't all due to the Ducktown Company.

Q. 145. You mean to testify the fumes coming out of the high stack at Copper Hill couldn't produce the damage within three miles of that plant?

A. It could in foggy, damp weather, when the fumes come down quickly" (Vol. 1, p. 29).

If the sulphur fumes from the high Tennessee stack could have cooled off and descended to the ground within two or three miles, then certainly the fumes from the Ducktown stack, which were largely cooled before entering the atmosphere, would be dissipated by the intervening hills before reaching Georgia.

This expert witness is only a plant pathologist, and does not profess to have any expert knowledge about the characteristics of gases; and his willingness to ascribe the greater part of the injuries occurring in Georgia to this defendant's furnace is but an evidence of the biased and unreliable character of his testimony.

2nd. A very large part, if not all of the injuries, to vegetation and forests in Georgia in 1914, occurred on June 8th and 9th, and it is positively proven that the fumes which then passed into Georgia were emitted by the furnace of the Tennessee Copper Company.

These dates are mentioned by so many witnesses introduced by both plaintiff and defendant that what then happened deserves special mention. One striking circumstance is that this should have occurred but ten days before the taking of defendant's evidence (Vol. 1, p. 556), when it was making preparation to prove that smoke fumes were then causing no damage in Georgia. This fact indicates that the smoke did not escape from defendant's furnace, and excites curiosity as to why it should have been permitted to escape at all.

These dates are mentioned by the following witnesses introduced by defendant:

J. W. PELFREY, who lives about two miles air course from Copper Hill, says he saw smoke going

towards Fryetown on the 7th, 8th or 9th, but paid no attention to the point from where it was coming. It bit the leaves of the garden peas and beet leaves and turned them yellow, but the damage was slight (Vol. 2, pp. 616-17).

W. T. S. DICKEY, when asked when it was he had smelled smoke at Mineral Bluff, says he would not be positive, but it was on Monday or Tuesday, he believes a couple of weeks before (Vol. 2, Q. 90, p. 855). His testimony was given June 19th (Vol. 2, p. 856). Hence it must have been on Monday or Tuesday, June 8th or 9th.

J. B. KINSEY says there was a little bit of smoke came over Epworth about the 8th or 9th of June, and it seemed for a little bit it hurt everything considerably, but in the course of ten or twelve days it was about all gone (Vol. 2, p. 1012).

The following witnesses introduced by plaintiff specially mention these dates:

C. S. NORTHCUTT, who lives in Turnip Town (Ellijay section), says the heaviest smoke he noticed was on the 8th and 9th of June, a little after twelve o'clock (Vol. 1, p. 97).

ASBURY HINSON of the same place says that the heaviest he ever saw the smoke was on the 8th and 9th of June from eleven A. M. to two P. M., and the next day the smoke was so thick that he could not see the trees, and the first effect was from this smoke in June (Vol. 1, pp. 99-101).

W. A. PAINTER of the same place says that the smoke was worse along about the 8th and 9th of June. It was after that that he noticed the damage (Vol. 1, p. 111).

W. S. HINSON of the same place says he saw smoke on the 8th and 9th of June. He was in Arnold's and his and his brother's orchards on the 8th, and it was worse than he had ever seen it, and on the next day it was as bad at his house (Vol. 1, p. 113).

GEORGE HINSON lives near Ellijay, and says

that on the 8th and 9th of June smoke came down about dinner time, and he thinks the smoke on those dates is the only smoke he noticed that did any damage (Vol. 1, pp. 121-2).

J. S. ROGERS lives near Ellijay, and says that it got the wheat along about the 8th and 9th of June. He had noticed some damage before that, but after those dates it looked like there had been a fire close to it (Vol. 1, pp. 123-4).

Other witnesses for plaintiff mentioned those dates, in connection with other dates. Hence there is no doubt that a very large part, or practically all of such damage as was done during the year 1914 to forests and vegetation in Georgia by smoke fumes, was the result of smoke that went into that section upon those dates.

The following evidence shows where this smoke emanated:

REESE testifies that on June 8th the smoke was down as far as Epworth, and hit the gardens and some shade trees. He and Professor Bain were taking photographs near the corner of North Carolina and Georgia and Tennessee. They intended to go into Georgia, but the smoke was so thick they couldn't take pictures. *It was coming from the Tennessee Copper Company's plant. He saw the smoke ascending from the top of the stack and drifting in the direction of Georgia.* They could see smoke from both plants, but none of the Ducktown smoke could be seen further than Callaway, a place about a mile or a mile and a quarter from the plant, but that from the tall stack went into Georgia as far as they could see from a mountain (Vol. 2, pp. 629-30).

J. H. QUINTRELL says that on the 8th of June he went to Isabella and stayed until twelve o'clock, and then came back to Copper Hill. When he got in sight of the Tennessee Copper Company's plant about half past twelve he could see the fumes coming out of the big stack and going right down towards Fighting Town Creek and Epworth. He is familiar with the smoke and knew something was wrong. He went to the river op-

posite the company's plant and turned up Fighting Town Creek and noticed damage in a field of corn, and went to the top of the hill to Fryetown, and saw the smoke had come from the stack before he reached there, and he could see the effect upon some beets and beans that belonged to his brother-in-law. That was about two o'clock, Monday, the 8th. He further says that *none of that smoke escaped from the Ducktown Copper Company's plant, for he came directly between the two plants over the ridge road and it was perfectly clear, no smoke was between them.* The Ducktown plant was in the hollow below and North of him, and the other plant was South of him; and he could see the high stack and the smoke coming out of it, and saw it going in the direction where he saw the damage; and it was hitting the ground probably five hundred to a thousand feet from the stack, and made a shadow which cut the sun off of him (Vol. 2, pp. 761-2).

M. D. RICHARDS lives at Copper Hill, and says that about the 8th of June he was in the plant of the Tennessee Company, and some gas was turned loose. Something got wrong with the acid plant, and the smoke came over reasonably strong where he lived in Hopper Town, which is half a mile, and at his place of business, which is a quarter of a mile, from the plant. He was at the plant both Monday and Tuesday, June 8th and 9th, and noticed that four furnaces were being run, and that they were putting green ore into two of them. They have a cindering plant to work the fine dust which generates some little bit of smoke that is not conducted into the acid plant, but comes out of the tall stack. They shut the cindering plant down shortly after he was there, and they claimed that part of the furnace was also banked (Vol. 2, pp. 701-3).

REESE says that on the Thursday following there was a great column of smoke coming out of the Tennessee stack, and also escaping from the smelter stacks of the furnace about the same as there was on the 8th,

and it was going in a Southeast course, but not so much in the evening as it was on the 8th (Vol. 2, p. 981).

There is no witness who claims to have seen any smoke escaping from defendant's plant upon either of those dates.

3rd. It is shown by the evidence beyond all question that no damage was ever done by sulphur fumes in the State of Georgia, unless it be in a very small strip in the extreme North end of Fannin County and immediately adjacent to the Tennessee plant, before the construction of the high stack by the Tennessee Company in 1906; and as there has been no increase in the amount of fumes allowed to escape from the Ducktown plant since that date, but to the contrary it has been vastly improved by the construction of the acid plant, it cannot be possible that any injuries to forests or vegetation in Georgia now result from the operation of this defendant's furnace.

In connection with this and the succeeding subhead, it is important to have in mind the several methods used by this defendant and the Tennessee Company and its predecessor, for smelting ores, and the dates upon which changes in those methods were made.

The first process used was to expel the greater part of the sulphur by roasting the ore on burning piles of wood. All the sulphur discharged escaped in clouds of sulphur dioxide gas which settled in the immediate neighborhood. After being cooled the ore was reduced in the same kind of furnace that is now used for smelting green ores.

About the same time experiments were conducted at Stechal and different mines in New Zealand and by W. H. Freeland, General Manager of the Ducktown Copper Company, who was the first person to succeed in the method now used in the United States. Mr. Renwick, who is now Superintendent of the Company, was then Assistant to Mr. Freeland. The method then discovered consists of placing the ore in the furnaces without being previously roasted, and the fuel required for the smelting operation consists of the sulphur, iron and silica, and sometimes a small amount of coke which is

introduced; and the heat is produced by chemical action between these several elements. This system is known as the pyritic process (Lamoreaux, Vol. 2, pp. 803-4).

The dates when there were material changes in the methods of operation of the furnaces, and material alterations in their construction are as follows:

The Pittsburgh Copper Company (the predecessor of the Tennessee Copper Company) began roasting ore on roast heaps in 1894, and discontinued operations entirely in 1898. The Tennessee Company began roasting ore in 1901, and discontinued that process and began the pyritic system in 1904 or '05. They roasted ores, in fact, in 1903 and '04, and the most of their roasted ores were worked up in the furnace in 1905. In 1906 they constructed the high stack, and began to manufacture acid in 1908, the acid plant being from time to time enlarged as heretofore described.

The Ducktown Company began operations in 1891, and in 1898 began open roasting, and in 1902 discontinued that process and began the pyritic system, and put in operation its acid plant on June 11th, 1909 (Lamoreaux, Vol. 2, pp. 797, 803-4; and Shiflett, Vol. 1, pp. 470-1).

Keeping in mind the year 1901, when the Tennessee Company began operations, and the year 1906, when it began the use of its high stack, and which was eight years before the taking of the depositions, let the evidence as to when injuries to forests and vegetation first appeared in the State of Georgia be considered. That prior to the beginning of operations by the Tennessee Company there had been no injury in Georgia is shown by those who were on what was known as the Mayfield Commission, who in the year 1901 made an inspection of the Ducktown Basin for the purpose of determining the smoke zone or the extent of territory then injured by sulphur fumes.

G. C. PARKS, who was on that Commission, says they were four days in making the investigation, and it was their sole endeavor to ascertain and report the facts

truthfully; that they went in and out of the Basin at various points and traveled completely around it; that the smoke zone had gone out next to the foot of the mountains in some places about two miles from the plant, and possibly in places a little further; that towards Georgia there was smoke seen on top of the ridge just South of where the Tennessee Company's plant is now located—South of the river, probably two miles from the Ducktown Company's plant (Vol. 1, pp. 585-7).

REESE, who was also on the Commission, says that with the Ducktown furnace as a center it extended from one to two miles. They could readily detect the extent of the zone by the effect on the timber, as the leaves were then in full foliage (Vol. 2, pp. 633-4).

M. T. FOUTS, who was also on the Commission, makes substantially the same statement (Vol. 2, pp. 638-9).

A map is filed as Exhibit D to Reese's deposition, which shows the location of the smoke zone as found by that Commission (Vol. 2, p. 984).

While the smoke zone was extended by, and some damage in the extreme North end of Fannin County resulted from, the operation of the Tennessee plant, which began in 1901, yet that there was no damage in any considerable part of Georgia prior to the erection of the high stack in 1906 is clearly shown by the witnesses introduced by both plaintiff and defendant, *and that fact is practically uncontroverted.* It is unnecessary to here repeat statements of many of the witnesses, in fact, all who made mention of dates, introduced by defendant, but as illustrations of the nature of their testimony see statements of R. T. HAMPTON (Vol. 2, p. 651); J. F. McNELLY (Vol. 2, p. 662); P. F. WILLIAMS, (Vol. 2, p. 676); C. G. BAUGH (Vol. 2, pp. 685-6); R. L. TURNER (Vol. 2, pp. 693-4); T. A. BYERS (Vol. 2, p. 679).

But even more conclusive upon this question is the evidence introduced by the plaintiff, which is as follows:

J. P. VESTAL, the witness who owns a large body of timber lands in Georgia, and has for a number of

years been engaged in litigation with the Ducktown Company, states that *from* 1905 to 1910 the smoke was very bad, and then for about two years it let up a little (Vol. 1, Q. 26, p. 162).

And again: "From 1905 until 1910 there was very great damage to us and then it let up until 1913, it wasn't so bad" (Vol. 1, Q. 158, p. 171).

Mr. Vestal lives at Epworth, which is but two miles South of Copper Hill, and would have suffered damage previous to that date had the smoke fumes extended any material distance into Georgia. The witness says *from* 1905, which excludes that date.

R. H. SMITH, who lives a mile and a half from Morganton, testifies that the smoke has been coming in there five or six years (Vol. 1, Q. 6, p. 197). He was asked if it wasn't true that in 1906 and 1908 and possibly in 1909 the trees were all scorched around Blue Ridge, and answered that he had seen them scorched all around over the creek and on back of the river and beyond the river from his place. He can't tell in what years that occurred, "but *it was after the high stack went up, and before the acid plants were installed*" (Vol. 1, Qs. 93-95, p. 202).

JOHN MILLER lives on Weaver Creek, about two miles Southeast of Blue Ridge. He was asked:

"When was the first year that you noticed the smoke in there doing any special damage?

A. It was about six years ago.

Q. Then it was in 1908?

A. Yes, sir" (Vol. 1, p. 192).

D. M. BUCHANAN, who lives on Weaver Creek, says that he guesses smoke has been coming in there five or six years (Vol. 1, p. 205).

And again: That he does not recollect that he noticed any damage *before the high stack was built* (Vol. 1, p. 207).

JAMES F. TEEM lives at Yukon, about six miles Southeast of Ellijay (Vol. 1, p. 69). He is asked:

"Q. 10. Tell me, please, the first time you noticed it (smoke) in there?

A. I reckon it was about three years ago that I first noticed it.

Q. 11. Do you swear that you never noticed the smoke in there until about three years ago?

A. If I did, I didn't know it was the Ducktown smoke" (Vol. 1, p. 73).

J. H. CLONTS lives on Turnip Town Creek, six miles East of Ellijay. He was asked on examination in chief:

"Q. When did you first commence seeing the smoke down in that neighborhood?

A. The first time I remember seeing so much of it come all at once was somewhere about eight or ten years ago when so much of it begun to come in there" (Vol. 1, Q. 18, p. 80).

C. S. NORTHCUTT, who lives in Turnip Town settlement, says that to the best of his recollection he noticed smoke in there seven or eight years ago (in 1906 or '07) (Vol. 1, p. 95).

ASBURY HINSON lives in Turnip Town, and looks after the Arnold orchard. He said on examination in chief that he has seen smoke in that community off and on for nine or ten years (Vol. 1, p. 99). On cross-examination he says it is something like seven or eight years since he first noticed smoke in there, and didn't notice any before that time (Vol. 1, p. 102).

W. A. PAINTER, of the same locality, says on examination in chief that the first time he noticed smoke in there was about six years ago (Vol. 1, p. 107). On cross-examination he says the first smoke of consequence he noticed was about five or six years ago, and he first noticed effects from it four or five years (Vol. 1, pp. 108-9).

W. S. HINSON lives at Owltown, three miles from Ellijay, on the Carter Cay River. He says he has noticed smoke in there off and on for six or eight years (Vol. 1, pp. 112-15). He has noticed damage to fruit

five or six years, and perhaps three, four or five years he has noticed damage to peas and oats (Vol. 1, p. 115).

GEORGE HINSON lives near Ellijay, and has lived there eight or nine years, and has seen smoke there nearly every year for several years, but lived there before the smoke bothered them. It was two or three years after he moved there before he noticed any bad effects (Vol. 1, pp. 118-20).

J. M. WITHROW lives at Mountain Town, Northwest from Ellijay. He first noticed smoke there about seven years ago (Vol. 1, p. 128), in 1908 (Vol. 1, p. 130).

A. E. SHARPE lives at Turnip Town, but is the woodsman for the Shippen Lumber Company and has been all through the mountains (Vol. 1, pp. 133-5). The first he remembers noticing smoke damage was something like five to seven years ago. It then appeared close to Blue Ridge (Vol. 1, p. 139). Again he says that he first noticed it from five to seven years ago along about 1907 or '08. The timber began to die, the hickory quickest (Vol. 1, p. 150).

T. S. JOHNSON, who lives on Carter Cay, says that when he lived back on the Blue Ridge in coves he made good potatoes, which was ten years or more ago, *before the chimneys were put up.* He was then much nearer the furnaces (Vol. 1, p. 188).

T. R. HARKINS, who lives on Jacks River, says that smoke first came in there something like five or six years ago, or perhaps longer (Vol. 1, Qs. 1-6, p. 239).

J. M. CARTER lives in a mile and a half of Morganton, and is one of the plaintiff's strongest and most emphatic witnesses. He says his oats and other crops were ruined in 1913, but testifies that he first noticed damages on his place six, seven or eight years ago, *after the high stacks were put in* (Vol. 1, Qs. 31-36, p. 214).

W. M. BAILEY lives at Burnett, which is six miles Southwest of Blue Ridge (Vol. 1, pp. 218-9). He was born and raised in the county, and says "It (the smoke)

has been in there every year for the last *eight* years" (Vol. 1, Q. 38, p. 220).

J. G. DeWEESE lives four miles Northeast of Ellijay and is President of the Farmers' Union (Vol. 1, p. 346).

He testifies:

"Q. Wasn't it (when he first noticed smoke) just about that time that the Tennessee Copper Company's high stack was erected?

A. Just about the time the Tennessee Company constructed that high stack I noticed the smoke first.

Q. Prior to that time you didn't notice it, the first was just after that time when you first began to notice the smoke in there?

A. Yes, sir" (Vol. 1, p. 348).

W. H. CARVER, who lives at Madola (Vol. 1, p. 460), says that it was about 1906 or 1907 when it began to kill stuff (Vol. 1, p. 462).

Even W. H. Shippen testifies that when he came to Georgia one company was using roast heaps, but *that couldn't affect the forests in his territory* (Vol. 1, Q. 24, p. 320), and Frank E. Shippen fixes the length of time, during which the farms, timber and orchards have been in an unhealthy condition, the preceding four or five years (Vol. 1, Qs. 30-1, p. 395), and again says that for the last *six or seven* years the growth of the timber will show for itself (Vol. 1, Q. 46, p. 399).

Thus plaintiff's witnesses, who live in the very sections where extensive damages are claimed, testify positively that there were no injuries from smoke in their sections prior to the construction of the high stack by the Tennessee Company; and but very few witnesses, and they manifestly of strong prejudice, make any claim that any damages have resulted from the presence of smoke in their locality prior to 1906. Certainly there is no evidence in this record to show that such conditions existed prior to the erection of that high stack in 1906, which would justify the issuance of an injunction in this case. The evidence heretofore cited, it is in-

sisted, refutes conclusively the claim of these witnesses that any material injuries have been done in these sections within the last three or four years; but *according to their own claims the injuries originated with the erection of the high stack of the Tennessee Company in* 1906.

4th. That no injury to the forests of North Georgia has been done by this defendant is further shown by the fact that the checks of the timber's growth were contemporaneous with the beginning of operations of the Tennessee plant in 1901, the change to the pyritic process by the Tennessee in 1904-5, and the construction of its high stack in 1906.

The age of a tree can be determined by taking a cross-section and counting the rings, and the rapidity of its growth in any season appears from the size of the ring made during such season. Hence, the history of the growth of a tree can be determined with absolute accuracy by an examination of its rings; and if a number of trees be examined and the history of them all corresponds, it is very strong evidence that each of them was affected from time to time by the same causes.

PROFESSOR BAIN says that this method of determining the growth of trees and when checked from any cause is well recognized by German students of smoke injury. He is familiar with the German language and reads it continually, and he had present when his deposition was taken an illustrated German work written upon that subject, and he files as Exhibit No. 65 to his deposition a photograph of a picture taken from that work (Vol. 2, p. 926).

In making his several tours through North Georgia and around the Ducktown Basin he examined a large number of stumps, took a number of sections from trees, and also obtained a number of cores from other trees by an increment borer. He says that he found all around the Ducktown Basin, and even up in the foot hills around the edge of the Basin in the mountain regions, that by far the greater injury from smoke occurred subsequent to 1905, that is, the growth checks

began for the most part in 1906 or 1907, and in some cases in 1901 and '02 (the date when the Tennessee Company began operations); a very few began in 1894 (when the Pittsburgh Company began operations); and some specimens showed growth checks from 1894 to 1898 (period during which Pittsburgh Company operated) with improved growth until 1901, and then much greater checks. The condition was practically the same in North Georgia. He found very few trees near the Tennessee line that showed any check before 1901. He has no record of having found a tree in Georgia in which the check began in 1891 (date when Ducktown Company began operations) (Vol. 2, pp. 923-926).

He files as Exhibits Nos. 66 to 72 (excepting Exhibit No. 67, a color photograph of the locality where Exhibit 66 was found) blocks taken from trees which corroborate his statement with reference to when the growth of the timber was checked. Where his photograph Exhibit No. 67 was taken a number of dead trees had the appearance of having been killed by a fire, but he found upon examination that fire was not the cause of their death. The first tree from which he took a chip established growth checks beginning about 1906 or '07, so that if the tree died from the effect of the smoke it was killed from its application not earlier than 1906 (Vol. 2, pp. 927-9). On his trip in January he took approximately twenty-eight cores from trees, and the history of the growth as shown by the cores corresponds to that shown by the blocks (Vol. 2, p. 930).

Plaintiff's proof upon this subject, as far as it extends, fully confirms the conclusions reached by Professor Bain from his examinations.

DR. HEDGECOCK and MR. CLARK, plaintiff's experts, concede that the growth of a tree in every season can be determined with accuracy by a careful examination of a number of sections taken therefrom, yet they endeavor to impeach the reliability of Professor Bain's conclusions by criticism of the increment borer. It is shown, however, that even when a tree grows with-

out uniformity, the *relative* sizes of the rings very generally correspond all the way around the tree.

But the reliability of cores obtained by an increment borer is of but little importance, as the testimony of plaintiff's witnesses and exhibits filed by them corroborate Professor Bain. Dr. Hedgecock and Mr. Clark, while at a saw mill on Fighting Town Creek, made measurements of eight pine stumps, the trees from which had been cut during that season, for the purpose of ascertaining the average growth during, first, the seven years from 1906 to 1913; second, the seven years from 1899 to 1905; and third, during the entire growth of the tree (Vol. 1, pp. 430, 431, 434, 435). While his table is somewhat difficult to understand, yet it appears that the growth for those periods of each of these several trees was as follows:

	1906-1913	1899-1905	Entire period
No. 1	.12	.22	.28
No. 2	.11	.22	.33
No. 3	.11	.2	.3
No. 4	.11	.22	years not given
No. 5	.18	.22	" " "
No. 6	.13	.31	" " "
No. 7	.13	.23	" " "
No. 8	.13	.23	.25
Average of the 8 specimens	.13	.22	.29

(Fractions less than hundredths not given).

It thus appears that the growth for the seven years succeeding the construction of the high stack by the Tennessee Company averages but little more than half of what it was for the previous ten years, and that the average for the second period, 1899 to 1905, is not one-third less than the average for the entire period of growth. Furthermore, Professor Bain testifies that after the first few years the extent of growth is generally greater than subsequently; that is, the larger rings of trees are those which are formed immediately after the first few years of their existence, which accords with

the observation of every man who has had any experience with timber (Vol. 1, Q. 379, p. 928). Therefore, the measurement of these large rings greatly increased the measurement for the entire period, and accounts for what excess there is of growth for the entire period over the seven years from 1899 to 1905.

Precisely the same result is shown by the five sections of trees taken by Frank E. Shippen from his lumber yard near Cherry Log, a station on the L. & N. Railroad nearly half way between Blue Ridge and Ellijay, and filed as Exhibits to his deposition (Vol. 1, pp. 400-401). On cross-examination he is shown these sections, and testifies with reference thereto that Exhibit 1 shows no arrest of growth until about 1907 or '08 (Vol. 1, Qs. 263-4, p. 424); that with No. 2 the decrease in growth "looks like it has been the last six or seven years" (Vol. 1, Qs. 267-70, p. 424); that Exhibit No. 3, a cross section of a poplar, shows that the last growth check was six or seven years ago, there having been another check something like fifty years ago (Vol. 1, Qs. 271-6, pp. 424-5); that Exhibit No. 4 shows no check in growth until 1906 or '07 (Vol. 1, Q. 277, p. 425); and that Exhibit No. 5 shows that the check in growth was seven or eight years ago (Vol. 1, Q. 278, p. 425).

These exhibits were filed by Mr. Shippen to refute the claim that there had been an improvement within the last three or four years. But the witness testifies that within the last year they have sawed something like seven hundred thousand logs (Vol. 1, Q. 286, p. 426); and it is remarkable that only these five sections are offered as evidence; and it is certainly very significant that every one of them agrees perfectly with the numerous stumps, sections and cores examined by Professor Bain, and with the measurements of stumps made by Dr. Hedgecock and Mr. Clark.

The forests of North Georgia have thus been made to speak for themselves, and when there is such accord among its individual members, the inference to which

they point, that this defendant has not caused any checks of growth of forests in Georgia, is irresistible.

5th. Evidence as to smoke which it is claimed was seen in Georgia on the 1st, 2nd, 3rd, 4th and 5th of July, 1914, and May 12th, 1913.

Plaintiff introduced Mr. G. M. Panhorst, Chief Clerk of the Tennessee Copper Company, and proved that the furnaces of the Tennessee Company were shut down on May 4th, 1913, and one furnace resumed operation on May 16th, and the remaining on May 17th, 1913, and that they were again shut down on June 23rd, 1914, and one resumed on July 6th, and the remaining on July 7th, 1914. Very great effort, therefore, has been made to prove smoke damages during those periods, as defendant's company alone was then operating. Doubtless Fannin and Gilmer Counties were canvassed from end to end for the purpose of procuring testimony with reference to these dates, and every particle of evidence which could possibly be obtained from sources greatly biased was introduced. And while several witnesses have testified with reference thereto, it is remarkable that the number is not much greater.

It is believed that the entire testimony upon this subject is as follows:

R. H. SMITH, who lives one and one-half miles South of Morganton, says he saw smoke there on July 3rd, but *noticed no damage* (Vol. 1, p. 197), and "I don't know anything of mine was hurt on the 3rd of July. I never noticed" (Vol. 1, p. 202).

J. H. TURNER lives on the river a mile from Morganton, and says the smoke "was thick like a big fog; my Irish potatoes were right there at the barn, and some tomatoes, and they wilted right up. I left there about twelve o'clock and the next day I come back on the 4th" (Vol. 1, Q. 41, p. 249). "The leaves and the weeds they were wilting before I left" (Vol. 1, Q. 116, p. 256). No other witness describes so bad conditions as this one. He and witness Smith were together, but Smith's testimony is mild by the side of his.

To rebut the statements of these witnesses defendant introduced J. M. DAVIS, who lives four miles East of Blue Ridge on Toccoa River within a mile or a mile and a quarter of Turner, and a mile and a half or three quarters of Smith, and *owns the place on which Turner lives,* and who testifies that he has been cultivating corn, potatoes and peas, and they were up and growing by the first of July, but were not injured by smoke during the year. He hasn't seen a particle of smoke signs on his place, nor have his crops been injured in any way from smoke fumes. He has not noticed around Turner, but in his neighborhood he hasn't seen a single leaf discolored by Ducktown smoke during the year. He gave attention to it because there was an appropriation made by the Tennessee Company, and he thought he might as well have a part of it as anybody (Vol. 2, pp. 1083-4); and W. E. ROGERS, who lives four miles from Blue Ridge near Morganton, on the Toccoa River, and on a farm adjoining the one on which Turner lives, and within a mile of Smith. He owns about three hundred acres of land and raises corn, peas, hay, millet, potatoes and other garden stuff, and raises garden truck to sell. His garden patch is about a quarter of a mile from Turner's garden, which is on the side of the public road, the main road from Blue Ridge to Morganton. While he has noticed some smoke through there during the year, making it look kind of hazy, yet he couldn't tell that any of his crops had been injured during the year. He watched very closely because there was so much talk about damage and so many putting in claims, and he didn't notice any discoloration on the leaves. His peas were about two hundred yards from the land that Turner was cultivating, there being just a small branch between the two tracts (Vol. 2, pp. 1085-7).

Photographs Exhibits Nos. 122 to 128 to J. E. Thompson's deposition were taken in that immediate vicinity, and show that there was no damage to vegeta-

tion there. They are explained by the witness Rogers (Vol. 2, p. 1088).

L. C. ALLEN, plaintiff's witness, lives one and a half miles South of Morganton, on E. W. Chastain's farm (Vol. 1, p. 230). He says smoke was in there on the 1st, 2nd, 3rd and 4th of July, and was the worst on the 2nd and 3rd he ever saw it (Vol. 1, p. 230-1). This is the witness who kept his records by placing a cross mark opposite dates on an almanac, and who preserved the record for indicting parties in the same way and on the same almanac. He habitually files claims (Vol. 1, pp. 231-5). He describes no injury resulting from the smoke. *Photograph Exhibit 125 to Thompson's deposition shows the farm upon which this witness lives.*

D. M. BUCHANAN, who lives on Weaver Creek, says that on the 2nd and 3rd days of July smoke was pretty bad (Vol. 1, Q. 36, p. 204-5); but he apparently claims that the damage he suffered was done in May and June (Vol. 1, Q. 28, p. 207).

Plaintiff introduced the following witnesses who testified about seeing smoke from the 1st to 6th of July, at Epworth and points South and Southwest of Epworth.

J. H. SETZER lives at Epworth (Vol. 1, p. 454), and says that smoke was over there on July 3rd, and about the 8th and 10th of June. He saw where it bit the corn and peas and crimped them up and killed them Vol. 1, pp. 454-5), but it isn't certain that he means those effects followed its presence on July 3rd.

On cross-examination he says he has talked with Vestal about the case, and saw Vestal whispering to lawyers, as he was being examined. He was a witness for Vestal when the jury decided the case against him (Vol. 1, p. 456).

W. H. CARVER lives at Madola. He noticed smoke on July 3rd (Vol. 1, Q. 17, p. 461). A neighbor of his was sitting on the porch, and he saw the smoke from the plants and made mention of it on that day (Q. 18). It had no effect on anything at his house. It

was going around the mountain, and didn't reach up to his house (Vol. 1, Qs. 21-3, pp. 460-1).

W. H. MARTIN lives near Burnett, and says that smoke was in that section July 3rd and 4th, and he could see the effects on the timber and growing crops some (Vol. 1, Qs. 16-19, p. 286). On cross-examination he says he is going to sue the Ducktown Company for $800.00, and is watching for evidence. He is a member of the Farmers' Union, which has employed counsel to look after cases (Vol. 1, p. 287).

H. H. and G. W. HOLLOWAY, plaintiff's witnesses, live near Burnett. They tell of drouth being there, and of Bill Martin having them to look at his stuff during the last of June (Vol. 1, pp. 289-290). This shows that the damage around Burnett was done before the 3rd of July.

B. H. SEBOLT lives on Sugar Creek, three miles from Blue Ridge (Vol. 1, p. 265). He says that on the 2nd, 3rd, 4th, 5th and 6th of July, smoke was in there to some extent, and was bad on the 3rd and 4th (Vol. 1, Q. 29, p. 267). He went up on the mountain July 5th to Mr. Tramell's orchard. The leaves were all kinked up and dried up and he saw the smoke coming out of a stack, but not the main stack. "It didn't boil out like it did out of that big stack" (Q. 34). The smoke scattered over here through the country (Q. 37). He discovered plenty effects thereafter on the timber (Vol. 1, Q. 40, p. 267).

On cross-examination he said that he couldn't see the stack where the smoke was boiling up (Vol. 1, p. 269). *He also testified that he thinks he saw smoke on the 25th and 26th of June, and that he spoke to his son about it on the 29th or 30th of June, and told him it was the worst he had seen in years* (Vol. 1, pp. 270-1). (On those dates *both* plants were closed down).

He filed a claim the year before for $200.00, and appears to have received $10.00; and had also filed a claim for the year 1914 (Vol. 1, p. 271).

C. J. TRAMELL lives two miles South of Blue

Ridge (Vol. 1, p. 293), and says he saw it there bad all over the country on July 3rd, strong enough to smell. On the 5th he went to an orchard on the mountain with Mr. Sebolt. They saw smoke coming out of the Basin and drifting in their direction, and could see it on the mountains and hills around them, and smell it (Vol. 1, p. 295). On the 4th it ruined the tops of his tomato plants, and garden beans and vines were scorched up (Vol. 1, p. 298). He has a suit against this defendant brought for the years 1906, '07 and '08 (Vol. 1, p. 297). He went to Knoxville in June, and hadn't been there for ten years, but couldn't remember the date, yet he remembers this date when there was no apparent reason why he should (Vol. 1, p. 300). He had been talking with Vestal and Shippen (Vol. 1, pp. 300-1); and says his vegetables were seriously bit before July, in April or May (Vol. 1, p. 301).

The conditions toward the head of Sugar Creek are shown by Thompson's photographs Exhibits 133, 134, 135 (Vol. 2, p. 1140).

W. T. ANGEL lives one and one-half miles Southeast of Epworth and three or four miles of Copper Hill (Vol. 1, pp. 272-3). He says smoke was in there on the 3rd and 4th of July, and ruined beans and stuff and affected Irish potatoes and sweet potatoes.

On cross-examination he says it was in there in May and June, but can't remember the dates, because "I wasn't looking for it as much then as I now do" (Vol. 1, Q. 3, p. 273). His neighbor, Harvey Cochrane, said it was down in his timber all over his stuff on *June 29th,* or somewhere along there (when both furnaces were shut down) (Vol. 1, p. 274). Witness filed claim for May and was going to for July. He received $5.00 last year.

J. P. VESTAL, who lives at Epworth and had lost a suit in the Federal Court at Chattanooga which he had brought against this defendant, and who has been so active in looking up witnesses for the plaintiff, says that he had some new potatoes bit by the smoke on July

3rd, 1914 (Vol. 1, p. 169), but that "they wasn't serious bit, but they crisped up until I knew that it was smoke, because it was in my garden that day" (Vol. 1, Q. 196, p. 183).

In rebuttal defendant introduced the following witnesses who testified about that section:

J. B. KINSEY lives at Epworth, and gardens altogether every summer. He says if there was any damage from the 1st to the 5th of July, 1914, he has no recollection of it. He thinks if there had been any substantial damage at that time he would have known it, because there was a little money appropriated, and he thought he was as much entitled to it as anybody, and hence he kept dates of damage (Vol. 2, pp. 1011-12).

M. C. GOSS lives at Epworth and has lived within a mile of the place for three years. He follows the carpenter's trade some and makes some garden patches and farms. If there was any damage done there from July 1st to 5th, 1914, he did not see it, and he was looking out to see if there was anything done to his garden, because it was said that one company was paying some damage to the State, and that the State was to pay it to the individuals that were damaged, and his idea was to put in a claim if he was damaged enough to be worth anything (Vol. 2, pp. 1017-18).

A. H. CHASTAIN lives three miles and a half or four miles nearly South from Epworth, and says if there was any damage from 1st to the 5th of July, 1914, he doesn't know of it. He came from the mines home on Saturday nights and back on Sunday nights. He traveled mostly through the woods, and there were some fields along there. If there had been any substantial damage at that time he would have seen it (Vol. 2, p. 1025).

HAM HOLT lives at Blue Ridge and travels through a number of counties in North Georgia. He saw no damage through that section which had been done from the 1st to the 5th of July, 1914; and if there had been damage of consequence in that section that

lies Southwardly, Southeastwardly and Southwestwardly from the Tennessee Copper Company's plant during that period he would have known about it (Vol. 2, pp. 1042-4).

With reeference to the Ellijay section, F. E. SHIPPEN, who kept dates when smoke appeared on the several mountains and valleys in view of Ellijay, says that on July 3rd the smoke was all over Flat Top and Bushy Head and Turnip Town Mountains, from seven A. M. to four-thirty P. M., and on July 5th the smoke was all over Flat Top and Turnip Town and Bushy Head Mountains, smoke strong (Vol. 1, p. 396). No other witness claims that smoke was seen on that date, anywhere in the State, at so early an hour or remained for such length of time. But he doesn't claim that any damage resulted from the presence of smoke on those dates.

For the defendant W. P. HARPER testified that he was cattle inspector for Gilmer County and was in the woods nearly every day. He passed by fields and orchards, and if there was any damage done through there by smoke from the first to the fifth of July, 1914, he didn't notice it, and he thinks he would have noticed it if there had been any damage of consequence (Vol. 2, p. 1029).

T. N. BENNETT lives one mile North of Ellijay and owns a farm, and has lived there for thirty-five years, and says that if there was any damage done through there from the first to the fifth of July he didn't detect it (Vol. 2, p. 1036).

As further refutation to all claims that any damages resulted from the 1st to 5th, or any other days in 1914, attention is specially called to the color photographs taken in the localities mentioned, and more especially to Nos. 136, 137, 138, 139 and 140, which were taken in Epworth; 133, 134, 135, taken on Sugar Creek; 104, 105 and 106, taken at and near Higdon's Store; 96 and 97, taken at Madola, and 142, taken but a short distance South of the Copper Hill furnace.

In all North Georgia the following six men were the only persons found who were willing to state that they saw smoke in Georgia while the Tennessee furnace was shut down in May, 1913.

T. R. HARKINS lives on Jacks River, and says that he saw smoke come out of the Basin on May 12th, 1913. He was up on the mountain and could see it come in and could smell it when he came down into it. It discolored the timber, and some of the timber died (Vol. 1, Qs. 58-66, p. 238). Smoke was in there before that. However, he says there was a frost on June 10th and 11th, and it was cold (Vol. 1, p. 242). The 12th of May is the only date he claims to remember, though he says it came in many times (Vol. 1, p. 243). He also says *there was a big high stack and he could see it mighty plain, and the smoke was coming from it* (Vol. 1, p. 246).

It is apparent that the stack the witness saw was the stack of the Tennessee Company, and if the witness saw any smoke in there at all he is mistaken with reference to the date. He for some time worked for Vestal, and Vestal was present when his deposition was taken whispering to counsel (Vol. 1, p. 246).

W. M. BARNES lives at the foot of Barnes Mountain (Vol. 1, p. 257), and he says he saw smoke that killed peas on May 12th, 1913 (Vol. 1, p. 258). Mr. John P. Vestal came and asked him to look at his garden peas, and they were folded up and drooped over, kinder blackish and crimped up (Vol. 1, p. 258). This witness filed a claim for all damages suffered during the year and received $30.00 (Vol. 1, p. 263).

B. F. WEEKS lives two miles from Ducktown, just over the Georgia line (Vol. 1, p. 350). He can't be positive as to exact dates, but thinks smoke came in there 11th and 12th of May, 1913. It was on Sunday after he came home from Chattanooga, where he attended as a witness for Vestal (Vol. 1, p. 351). He noticed some damage to the beans, but it wasn't a great deal (Vol. 1, p. 351). On cross-examination he says the smoke did

a little bit of damage to English garden peas (Vol. 1, Q. 32, p. 354), and there was nothing else in the garden that attracted his attention (Vol. 1, Q. 56, p. 395).

A. J. BELL lived four miles from Isabella, in the edge of Cherokee County, North Carolina (Vol. 1, p. 277). He says he was in Chattanooga as a witness for Vestal and returned the 7th of May, and on the 7th and 8th for a week or more smoke came in there, and corn was burnt like killing frost and potatoes were bit. His land bordered on the Georgia line, and he would come into Georgia every week or so (Vol. 1, pp. 279-80).

On cross-examination he says he had had a suit against the company a number of years before, and it appears that he was a settler of suits against the company, and had been a witness against it at least a dozen times. He came in the court room with Vestal, who with Shippen were present when his deposition was taken (Vol. 1, p. 281).

J. H. SETZER, who lives at Epworth, had a crop on J. P. Quintrell's place in 1913, and says that on the 11th and 12th of May it bit his corn and potatoes (Vol. 1, p. 456). There appears no reason why he should have remembered that date.

And Vestal claims that on May 12th, 1913, the day after he returned from Chattanooga when there was a mistrial in his case against this defendant, the smoke bit three rows of garden peas and some corn at his place (Vol. 1, pp. 170-182).

This date was so remote that it was impossible to procure any witnesses who remembered specially about it. But the claim that damage of any consequence was done at any time in that year in Georgia is refuted by the mass of witnesses whose evidence has been heretofore cited. Four or all but two of plaintiff's witnesses live within two or three miles of the Georgia line, while the distance the other two (Harkins and Barnes) reside from the defendant's furnace make the claim that sulphur smoke was there on that date absurd.

But suppose it be conceded that all the smoke

claimed by plaintiff's witnesses floated into Georgia on the days mentioned, from July 1st to 5th, 1914, and on May 12th, 1913, and that all the damages they claim resulted therefrom, such fact would afford no ground for an injunction, because the consequences were too insignificant. Certainly the State of Georgia cannot compel the closing down of defendant's plant unless its operation causes some *substantial* injuries; and these witnesses claim practically no injuries to the forests, and comparatively little to their crops, and those they describe to their gardens are of an insignificant character.

IV.

Changed conditions as respects litigants since 1907, whereby Georgia has now no equitable right to insist upon a final injunctive decree against the Ducktown Copper Company.

The bill herein was exhibited against the Tennessee Copper Company and the defendant Ducktown Copper Company jointly. Present counsel had no connection with the case then, but apparently there was a joint defense, and no effort to fix responsibility as between the two companies. The former opinion seems to have assumed they were jointly at fault, but it did not turn "on any nice question of fact" (206 U. S., 236). Without comparing the operations of the joint defendants, the opinion recites that the gas generated by them was "carried by winds great distances and over great tracts of Georgia land" threatening damage on "so considerable a scale to the forests and vegetable life, if not to health, within the plaintiff state as to make out a case within the requirements of *Missouri vs. Illinois*, 200 *U. S.*, 496."

In this connection it should be noted there has never been but one tall stack—that of the Tennessee Copper Company, completed in the spring of 1906, which is 325 feet high. Yet the former opinion recites the plaintiff state then thought "that the tall chimneys" (as if each company employed them) "in present use caused the poisonous gas to be carried to greater distances than ever before."

We recognize that plaintiff is here asserting "quasi-sovereign rights," but this, as stated in the opinion

above, does not exclude "considerations that equity always takes into account."

Having regard to such considerations, it is our view that the relations of plaintiff and defendant Tennessee Copper Company, to each other and to this litigation, have so materially changed, when compared with the record of 1907, as to constitute a materially "changed condition" within the purview of the order permitting proof herein regarding "changed conditions." And that when fully understood, such "changed conditions" quite justify a refusal of the order plaintiff now asks, and likewise warrants a dismissal of this action as against the Ducktown Company.

The officials of Georgia have throughout contended only for what to them seemed right, and no criticism is intended of any action by them or by the state. But it is apparent from the full record that the state has been imposed upon, and in the prosecution of this action has been used to promote private and selfish interests of individuals. This is shown beyond question by the cross-examination and conduct of W. H. Shippen and F. E. Shippen, large stockholders, and president and vice-president respectively of Shippen Bros. Lumber Company, both of whom are most prejudiced and antagonistic witnesses against this defendant.

The Shippen Bros. Lumber Company held or claimed by deeds, leases, etc., many thousand acres of timber land near the Tennessee line prior to the institution of this suit, and continuously since. Witnesses W. H. Shippen and F. E. Shippen, up to the handing down of the original opinion herein, owned 1560 shares of the company out of a total of 4500. The company was capitalized at $1,000,000.00, divided into 10,000 shares. The Shippens maintained that the lands of the company were being damaged by fumes from the smelting operations, and insisted to both companies that their claims should be recognized. Both companies at first declined to treat with them. They did not enter the Courts, claiming they could not get justice there. Accordingly, they undertook to force a payment to the Lumber Company,

and in addition the payment of large sums directly to themselves, in consideration of their passivity and quiesence—after they had largely induced the institution of this litigation—as respects the legislature, newspapers and the public generally. The activity of the Shippens, their connection with the litigation, that they inspired it with a view to individual profit, and that they have profited thereby, are matters clearly disclosed from their own testimony, and not disputed.

W. H. Shippen recently deposed, after recounting his and his brother's efforts to have this suit filed, in part as follows:

> "For years deponent, with his brother, labored with the owners of timber in North Georgia, with legislators, with the legislature itself, with committees from the legislature and with different officials of the state and in the scientific study of the character of the fumes, the extent to which they would go and the injury inflicted. After almost numberless appeals to the public authorities, to the newspapers, to scientific magazines, and using every influence in the world that could be brought to bear upon the situation, deponent, with his brother, finally got the movement into a compact, well organized condition where it presented a formidable front to the further infliction of the damage.
>
> "The State of Georgia was finally induced, almost entirely by the labors of the deponent and his brother, to file a bill in the United States Supreme Court." (Vol. 1, pp. 523, 545).

W. H. Shippen further states of his connection with this case that—

> "In the preparation of the trial, deponent procured, and caused to be procured, thousands of affidavits, which, when printed, filled several volumes of printed matter as a part of the record of the litigation. * * * This litigation resulted in an adjudication by the Supreme Court of the United

States that a nuisance existed which should be stopped." (Vol. 1, pp. 524, 545).

Immediately after the former decision was announced, W. H. Shippen requested a confidential friend and associate stockholder in his lumber company, whom he addressed as "My Dear Mr. Patton" to visit Martin Vogel, Esq., a New York attorney and counsel of Tennessee Copper Company, and picture to Mr. Vogel the happy results that would follow if the Shippens were appeased. He wired this friend and then confirmed it by letter, a quotation from which is:—

> "Supreme Court Clerk Washington wires Copper Co. injunction granted. Am also handing you clipping from Atlanta Constitution which shows we have all we asked for. Judge Hart gives me full credit for the whole, and as to what the other side thinks of my efforts in the matter, would like for you to ask the attorneys of the copper company. By the way, it might be well for you to drop in on Martin Vogel, 170 Broadway, the next time you are in New York and feel him. You know nothing of the case, and see what he says. We ought to be losing no time now in going for damages in earnest, as our case is now made out." (Vol. 1, p. 534).

The original opinion was handed down on May 13th, 1907, and three days later, or on May 16th, W. H. Shippen wrote his friend Mr. Patton further, in part:

> "Now, it is my decided opinion that I should get busy at once and see what can be done about settlement of our claim with these people, and I am of opinion that they would settle with us promptly to get me out of the way and use my action to control the others who have claims against them. I should see their attorney in New York at once; but cannot leave here with things in the shape they are now." (Vol. 1, pp. 534-5).

The letter, considered in connection with W. H. Shippen's testimony and affidavits, reveals what the

Shippens had in mind prior to the institution of this litigation, during the time they were engaged with the propaganda that lead up to it and the subsequent proceedings down to the final decree. And further that they reaped a rich harvest from the efforts they had put forth. W. H. Shippen was correct in his belief that the time was opportune to strike the New York attorney for a settlement of their claim,—which, as we will subsequently show, they, in common with others, viewed as resulting well nigh solely from the operations of Tennessee Copper Company.

What negotiations immediately followed the visit of Mr. Patton to the attorney of the Tennessee Copper Company in New York does not appear, but on March 27th, 1908, there was a called meeting of the stockholders of the Shippen Bros. Lumber Company, in New York City, at which President W. H. Shippen and other stockholders attended. The particular matter for consideration was negotiations between the Shippen Company and the Tennessee Copper Company. No claim had been filed by the Shippen Company in the courts. No suit was pending. The matter was simply a "claim." As a result of this called meeting and conferences with Attorney Vogel, an alliance between the Shippens as individuals, their Lumber Company and the Tennessee Copper Company was formed. The arrangement consummated was as follows:

(1) The Tennessee Copper Company paid and guaranteed to the Shippen Company $50,000, one condition of which was that the Shippens, as individuals, were to cease "activities against the Tennessee Copper Company" from that minute (Vol. 1, pp. 525-6).

(2) The Tennessee Copper Company agreed to co-operate with the Shippens and to assist in retaining W. H. Shippen as President of the Lumber Company at a substantial salary (Vol. 1, p. 542).

(3) The Shippen Lumber Company gave to Tennessee Copper Company—

"a full and general release for any and all dam-

ages that may arise from the operation of its smelter plant or from any smelter plant it may have or which it may hereafter have, by reason of smoke, fumes and gases passing over and upon the lands or timber now owned or controlled, or in which said lumber company is now interested * * * without limitations in respect to any increase in the amount or intensity of such smoke, fumes and gases or from any present or future method of operation, etc." (Vol. 1, p. 538).

(4) The Shippen Company granted to the Tennessee Copper Company—

"a right of easement by which said copper company and its successors and assigns may maintain and operate smelters or plants as it may require and allow and permit the smoke, fumes and gases therefrom to pass over and upon said lands, timber, options and interests as aforesaid, without let, hindrance or molestation of said lumber company, its successors or assigns, creating by said instrument a perpetual servitude, easement or estate, which shall run with the land in favor of said copper company, its successors and assigns, and against said lumber company," etc. (Vol. 1, p. 538-9).

The thrifty Shippens were not satisfied with the payment of $50,000 to their Lumber Company, but as suggested in the letter from W. H. Shippen to "My Dear Mr. Patton," they thought the time propitious for disposing of their then holdings in the Lumber Company, and the facts with reference to the proceedings herein by the State of Georgia, and the manner in which the Shippens were to profit thereby did not appear until recently disclosed in a proceeding in the United States Court at Atlanta brought by other stockholders of the Shippen Lumber Company against witnesses W. H. and Frank Shippen.

Judging from the dates of the several instruments there filed, while the "negotiations" between the Lumber Company and Tennessee Copper Company were pro-

gressing openly and in the presence of the stockholders at the called meeting in New York, there were collateral negotiations between the Shippens as individuals and Tennessee Copper Company, through one Oscar B. Van Sant, a clerk in the office of the Copper Company, whereby the Copper Company, through Van Sant, was to take over all the holdings of the two Shippens at a premium of 50 per cent,—although the stock was then worth much below par. For these holdings the Shippens were paid, or guaranteed, by the Tennessee Copper Company, $234,000 (Vol. 1, p. 541).

In part consideration therefor the two Shippens, as individuals, contracted with the Tennessee Copper Company—

> " * * * that they will not act with any other parties or do anything against the interests of the Tennessee Copper Company, as they may be advised by said Tennessee Copper Company" (Vol. 1, p. 543).

The Tennessee Copper Company guaranteed full performance of the contract by Van Sant, and for fear that it did not possess the corporate power to make such guaranty, Mr. Frederick Lewisohn, principal owner of the Tennessee Copper Company stock, guaranteed that the Copper Company possessed the legal power in the premises, and that this guaranty was a legal and binding guaranty (Vol. 1, p. 544).

It thus appears that the Shippens, as individuals, were to receive and the Tennessee Copper Company was to pay the munificent sum of $234,000.00 for their stock in the lumber company, and the Shippens were not to antagonize, which means, of course, that they were to promote the interests of the Tennessee Company. The Tennessee Company thereby secretly obtained two friends, not only among the officials of the lumber company, but among those most active in inducing and pressing the State of Georgia forward in its efforts, which up to that time had been directed against both companies. It may be justly stated from the present record that

thereafter, in the management of the State of Georgia's case, so far as the Tennessee Company was concerned, there were two traitors in the camp who had been paid their price. The facts disclosed clarify some things which had appeared mysterious before, one being the lenient attitude of the State of Georgia with respect to the Tennessee Copper Company, while pressing vigorously against the Ducktown Company. Another remarkable circumstance appearing is, that smoke is emitted at all times in great volumes from the high stack of the Tennessee Company located on the Georgia line—while complaint is made of the much smaller volume emitted from the much lower stack of the Ducktown Company three miles further removed from Georgia. And still another significant circumstance is that the Shippens are so antagonistic in their evidence against the Ducktown Company, endeavoring to fasten upon it all the injuries resulting from smoke fumes, and at the same time endeavoring to excuse in every way, the Tennessee Company. The value of the testimony of W. H. Shippen may be easily judged by the equivocations and quibbling on cross-examination. He at first pretended that the lumber company compromised, or gave an easement over its protest (Vol. 2, pp. 332-3). That he did not know the terms of the settlement; that he didn't know the Tennessee Plant was larger than the Ducktown plant; or that the Ducktown plant was further from the Georgia territory. He maintained that the Ducktown Company helped to increase damage claimed after the construction of the high stack by the Tennessee Copper Company, although the former did not increase its output or the height of its stack (Vol. 1, pp. 336-7). He was not frank enough to admit when first shown the "My Dear Mr. Patton" letter that he wrote it (Vol. 1, p. 515). He declined to answer whether, after selling the stock of himself and brother to the Tennessee Copper Company at a fabulous price, he immediately purchased other stock to take the place of that sold at a greatly reduced figure (Vol. 1, pp. 516,

528). He insisted the Ducktown Company "has ignored us and treated us with disdain" (Vol. 1, p. 529).

This is the same W. H. Shippen who was a member of the commission which reported to the Governor of Georgia September 24th, 1906, regarding the operations of the defendants, and in which report, with respect to the stack of the Tennessee Copper Company, the following appears:

> "The high stack of the Tennessee Copper Company has in no wise relieved the situation. On the contrary we find the evil spreading at an alarming rate in all directions." See "Supplemental Evidence and Exhibits" by Hon. John C. Hart, Attorney General, October Term, 1906, p. 6.

In the same connection Judge Hart observed, with respect to the capacity of the two companies in 1905 and subsequent—

> "Since said date the Tennessee Company has more than doubled its furnace capacity, while that of the Ducktown Company has remained unchanged, giving a ratio of production of *at least seven times* as much by the Tennessee Company as by the Ducktown Company." (See Supplemental Evidence and Exhibits by Judge Hart, October Term, 1906, page 3).

The principal witness for the plaintiff on the former hearing was Prof. John M. McCandless, State Chemist, a scientific man of great learning. It will be seen that Judge Hart justifies his conclusions throughout by reference to the testimony of this witness. And the same witness, McCandless, signed the report above wherein special reference is made to "the high stack of the Tennessee Copper Company." It is also worthy of note that this same Prof. McCandless recently testified herein that there were no damages of consequence resulting from the operations of the Ducktown Company since its acid plant was installed (Vol. 1, pp. 385-9).

Judge Hart conceded the injury to Georgia terri-

tory began with operations of the Tennessee Copper Company, as witness the following quotation from his argument—

> "The injury in Georgia has been accomplished within the past five years, but more injury will be done per month during the spring and summer of the present year than was accomplished throughout the entire year at the beginning of such period. In the Ducktown locality up to the year 1900, the Ducktown Company was operating on so small a scale that the effects of its fumes were not perceptible as far distant from that plant (located several miles from the nearest Georgia territory) as the Georgia line. The Tennessee Company began smelting to a limited extent in the latter part of 1901, but it was not until the spring of 1902 that anything like extensive operations were begun." (See Argument and Exhibits of General Hart, October Term, 1905, page 2).

Judge Hart referred to the Tennessee Copper Company as the "chief offender," thus—

> "Shortly thereafter the Tennessee Copper Company, the chief offender, by reason of its large production and location of its plant, removed its roasting plant from a point several miles within the interior of Tennessee to a location but a few hundred yards distant from the Georgia line and began roasting its ores through furnace smelters, producing and liberating gas in much stronger form and diffusing said gas directly upon Georgia soil without even the leavening influence of several miles of atmosphere formerly intervening under the location and operations as at the time the first bill was filed. In addition, the Tennessee Copper Company was and is engaged in more than doubling the capacity of the plant, which, if allowed to operate as enlarged, will more than double the production of sulphur dioxide first complained of." (Ib., p. 3-4).

Of the operations of the Ducktown Company he correctly observed—

> "The remaining defendant, the Ducktown Sulphur, Copper & Iron Company, is still producing said fumes to about the same extent as when the first suit was filed." (Ib., p. 4).

In his argument in 1905, General Hart concluded, from the evidence, not only that the Tennessee Copper Co. was the "chief offender," but that its "present works were built with full knowledge by such company of the injury they would inflict upon the State of Georgia." (Ib., p. 15). He portrayed the process of the Tennessee Company then under way, its capacity, and the possible disastrous results from the tall stack, thus—

> "In addition to the works already in operation, the Tennessee Copper Company has about completed four new furnaces, more than doubling the capacity of the plant, which furnaces are connected with a chimney, which, it is asserted, will be considerably taller than the stack connected with the three furnaces in operation when the bill herein was filed. It is claimed by the copper company that the taller chimney will alleviate the nuisance, *but this claim cannot be substantiated.*" (See Argument General Hart, 1905, p. 16).

The able solicitor, justifying his conclusions by reference to the witness McCandless and others, then further observed of the Tennessee Copper Company's tall stack being erected—

> "A higher chimney will result, as shown by the affidavits of the chemists, foresters and other experts in the science of plant life, in no benefit to the injured section, except that in a mile or two of the plant, which will be accomplished at the expense of the more distant territory, as the fumes will be given additional carrying power by reason of their liberation from a higher point. With this chimney and the increased production, not only will all the injuries be multiplied, but the territory sub-

ject thereto will be enormously increased." (Ib., p. 17).

Under the arrangement with the Shippens, the Tennessee Copper Company was licensed to continue its operations with its high stack *"operated at their fullest capacity, without regard to the operation of the sulphuric acid plant."* (Vol. 1, p. 502).

The Shippens, their Lumber Company and the Tennessee Copper Company were all obligated to secrecy, to the end that the true situation should not be revealed to the State of Georgia, the Ducktown Company, a joint defendant herein, and to this Honorable Court. (Vol. 1, pp. 518-19).

Thus, a keen competitor of the Ducktown Company and a joint defendant herein became, and for years has been, a large stockholder in the Shippen Lumber Company, profiting from all revenues by it received.

It is undisputed that the "chief offender" from the outset was the Tennessee Copper Company. With the beginning of its operations in 1900-1 the first complaints were registered by citizens of Georgia. With the instalment of its high stack in 1906 the damage to more distant Georgia territory was inflicted, as all agree. It is undisputed that the stack of the Ducktown Company remains as formerly but 70 feet in height. (Vol. 2, p. 798). The distance of this plant from Georgia territory, the intervening hills between the top of its low stack and the Georgia line, and the numerous other factors entering into causation and effect are most convincing that whatever of damage, if any, is now being done within the State of Georgia is attributable entirely to the operations of the Tennessee Copper Company. This, to say nothing of the splendidly equipped and expensively constructed and efficient acid plant of the Ducktown Company, completed and put in operation since the decree of 1907.

Obviously, the pertinent facts above were not under-estimated by the Shippens. But the Ducktown Company, believing it was well within its rights, declined

to bargain with the Shippens and intrigue against the State of Georgia. It declined to purchase their influence or their passivity.

Straightway, there was a resumption of former hostilities by the Shippens. Their tenants and neighbors were assembled, some of the thousand or more persons whose affidavits the Shippens had procured for the former hearing, were called as witnesses and their testimony recently taken.

V.

The evidence falls far short of making out a case for an injunctive decree under the rule laid down on the first hearing and under the general rules of law relating to the abatement of public nuisances.

On the former hearing the Court said:

> "The caution with which demands of this sort, on the part of a state, for relief from injuries analogous to torts, must be examined, is dwelt upon in Missouri vs. Illinois, 200 U. S., 496, 520, 521;" and stated its conclusions from the evidence presented as follows:
>
> "Without any attempt to go into details immaterial to the suit, it is proper to add that we are satisfied, by a preponderance of the evidence, that the sulphurous fumes cause and threaten damage on so considerable a scale to the forests and vegetable life, if not to health, within the plaintiff state, as to make out a case within the requirements of Missouri vs. Illinois, 200 U. S., 496." (206 U. S., 237, 238).

In *Missouri vs. Illinois,* 200 U. S., 521, the Court said:

> "Before this Court ought to intervene, the case should be of serious magnitude, clearly and fully proved, and the principle to be applied should be one which the court is prepared deliberately to maintain against all consideration on the other side. See *Kansas vs. Colorado,* 185, U. S., 125." (200 U. S., 521).

The bill filed by the State of Missouri was dismissed because it was not clearly shown by the evidence that the water of the Mississippi was materially contaminated by the sewage discharged into it from the City of Chicago.

It is furthermore well recognized that the Courts should proceed with the greatest caution in determining whether an obstruction or certain acts constitute a public nuisance, and should not extend their decrees with reference thereto beyond the facts clearly proven. In High on Injunctions, Section 760, it is said:

> "But to warrant an injunction against an alleged purpresture or public nuisance, it must clearly appear that it is such in fact, and if it be doubtful whether there is a purpresture the relief will be withheld."

Attorney General vs. Delaware and Bound Brook R. R. Co., 27 N. J. Eq., (12 *C. E. Green*), 1 was an action brought to have removed a viaduct built across a navigable river on the ground that the structure was a purpresture and public nuisance. The Court held that:

> "If it were merely doubtful whether there is a purpresture or not, an injunction asked for on the ground of purpresture will not be granted. To warrant an injunction in such a case it must be clear that there is a purpresture."

And again:

> "In an action to remove an erection in a public river on the ground that it is an injury to the *jus publicum,* the common right of navigation, it must appear that a nuisance, in fact, exists, even though the erection be an encroachment on the soil of the state."

This Court has declared this principle with even greater emphasis. *Mississippi & Missouri R. Co. vs. Ward, 2 Black,* 485-495, was an action brought by a private individual to have abated an alleged public nuisance, to-wit: a bridge over the Mississippi River. The

Court in the first place held that under such circumstances the private party acts rather as a public prosecutor on behalf of all who are or may be injured; with reference to whether that part of the bridge within the jurisdiction of the Court below was a public nuisance, the Court said:

> "Is the bridge West of the Illinois boundary an *unreasonable* obstruction, and therefore a nuisance? In considering this question we must be governed by the same rule on which a court of law could proceed in case of an indictment against the bridge company for committing the nuisance; and the rule is that if the abridgment of the right of passage occasioned by the erection was for a public purpose and produced a public benefit, and if the erection was in a reasonable situation, and a reasonable space was left for the passage of vessels on the river, then it is not an unreasonable obstruction and indictable. Rex vs. Russell, (6 Boren & Crews, 566; 13 How., 623; 15 Wendell, 133).
>
> "Then, again, the obstruction to navigation must be plainly a nuisance within this rule before it can be removed by decree. If the proceeding was by indictment and the jury doubted whether the obstruction was a nuisance or not, they would be instructed to acquit the defendant; and so, if this case was referred to a jury to try the fact, and they doubted, they would be bound to acquit, and the same rule applies in a Court of Chancery when the Court ascertains the fact of nuisance. 2 Storey's Com. on Eq., 203-204."

The evidence certainly fails to show that this defendant is the cause of such injuries to forests and crops in the State of Georgia as warrant an injunctive decree under these authorities. It is not convincingly proven that any timber at all is now being destroyed, the principal claim of injuries to forests being that from time to time the foliage of restricted areas are browned, and the decided weight of the evidence, it is insisted, is against

that claim. Nor does the evidence make it at all clear that any material damage is now being done to crops or gardens in the State of Georgia, the contention being that in individual instances a patch of corn or a field of oats or some tender garden vegetables, as young potatoes, peas or beans, are affected. *And if defendant's evidence be cast aside and plaintiff's alone be considered, it is left in very great doubt whether this defendant is the cause of any injury in the State of Georgia.*

That generally speaking no damage has been suffered by the citizens of North Georgia is conclusively shown by the fact that the valuation of land there has in recent years very greatly increased.

FRANK E. SHIPPEN admits that the property which was purchased by them in 1895 has increased six or eight times in value, and that the thirty thousand acres which was purchased in 1905 for $4.00 per acre is now worth $15.00 per acre, or it has nearly quadrupled in value (Vol. 1, p. 411.)

W. H. SHIPPEN even testifies that the hundred and eight thousand acres of land owned by the Shippen Lumber Company have increased fifteen or twenty times in value since they were purchased by the Company, notwithstanding the fact that they have cut five or six million feet of lumber from them (Vol. 1, p. 342).

VI.

Having entered into a stipulation with the Tennessee Copper Company whereby it is permitted to float smoke over its domain, and having made a similar offer to this defendant, plaintiff is not now entitled to any injunctive decree against this defendant.

A decree inhibiting the maintenance of a nuisance must be specific in its terms. It must not be broader than the facts warrant, and it must point out clearly what acts the defendant must do, or what he must refrain from doing. (29 Cyc., 1252).

Valentine v. Webb, 84 Mich., 38-46-49, affords a good illustration of this rule. That was an action brought to enjoin the defendant from operating a

slaughter house near the complainant's premises. The lower Court "did not order the defendant to cease using the place as a slaughter house altogether, but decreed that defendant refrain from using or employing the buildings and sheds erected on defendant's premises for the purpose of a slaughter house wherein to slaughter hogs *in such a way* as to be offensive to, or become a nuisance to, the complainants; and that defendant desist and refrain from using or employing the said enclosure or building for the purpose of confining therein quantities of same or other animals *in such a way as to be offensive to and to be a nuisance to the complainants, or any of them;* and that defendant desist and refrain from using said enclosure, or any part thereof, as a drying yard in which to dry hair or bristles taken from the slaughtered swine."

With reference to this decree the Supreme Court said:

> "The trouble with the decree is that it fails to point out specifically what defendant is required to do in order to comply with its requirements. To adjudge that defendant should so conduct his business as not to be offensive is to give him no rule of conduct which the law had not before prescribed. The decree should have specifically pointed out the things that defendant was required to do, and to refrain from doing, in order to abate the nuisance which the Court found to exist."

It is not understood that plaintiff is demanding a decree restraining defendant from further operating its plant, and it would hardly be insisted by the most earnest advocate of plaintiff's rights that a decree so drastic in its terms would be warranted, if all the smoke fumes which now pass into Georgia were emitted by this defendant's furnaces. But if such a decree were entered and defendant's plant were entirely closed, it is certain from the evidence that the conditions would remain practically unchanged because of the continuance of the operation of the Tennessee Plant, and no relief would re-

sult to the citizens of Georgia. But how is it possible to enforce a decree of any other kind as long as the furnaces of the Tennessee Company are permitted to operate without being subject to a like decree of this Court? Suppose that this defendant be enjoined from injuring the corn, potatoes and beans of citizens of Georgia by the emission of smoke from its furnaces, and suppose it be cited for contempt for violation of such a decree, and it be shown that in a certain locality on a certain day the gardens were scorched by sulphur fumes. This record shows with practical certainty that such injuries would be produced by the Tennessee Company, and with absolute certainty that it could not be proven that they were caused by this defendant.

Therefore, by entering into the stipulation with the Tennessee Company and permitting it to continue its operations, plaintiff has made it impossible to enforce any injunctive decree that might be entered by the Court.

Again: By entering into the stipulation with the Tennessee Company whereby it may unmolested continue to emit smoke for a money consideration of $16,500.00, and offering to make a like stipulation with this defendant for $8,500.00, plaintiff has placed a money value upon the injuries inflicted upon its citizens, and has confessed that they are so insignificant in amount as not to warrant an injunctive decree. When the State of Georgia confessed that $25,000.00 per annum would be reasonable remuneration for all injuries which her citizens suffer from the operations of both plants, it thereby admitted that there has been no such encroachment upon her domain as to warrant a decree which would destroy these great enterprises or greatly hamper their operations and development.

VII.

In actions brought to enjoin the maintenance of a nuisance, if defendant ceases to maintain the nuisance at any time while the case is within the jurisdiction of the Court, and it is apparent that its resumption is not intended by the defendant, a decree of injunction will be denied.

This principle is sustained by the following authorities:

1 High on Injunctions (4 Ed.), Sec. 572; Trulock v. Merte, 72 Ia., 510-513; Perry v. Howe Co-operative Creamery Company, 125 Ia., 415-417; McCarthey v. Gaston Ridge Mill, etc., Co., 144 California, 542-546; King v. Morris & Essex Railroad Company, 18 N. J. Eq., 397, 399, 400; Arizona Copper Company v. Gillespie, 230 U. S., 46, 55, 57.

It was under this principle, we take it, that the parties were authorized to take proof for the purpose of determining in what manner this defendant is now operating its plant.

For the foregoing reasons it is insisted that the application of the State of Georgia for a final injunctive decree be denied, and that the cause be dismissed.

W. B. MILLER,
J. A. FOWLER,
Solicitors for Defendant
Ducktown S. C. & I. Co.

[redacted]

[redacted]

[redacted]

THE STATE OF GEORGIA

Complainant

vs.

THE TENNESSEE COPPER COMPANY

and

THE DUCKTOWN SULPHUR, COPPER AND IRON COMPANY, Ltd.

Defendants

IN EQUITY

[redacted]

W. A. KELLER,
J. A. FOWLER,
Solicitors for Duckstown Sulphur, Copper & Iron Company, Ltd.

[redacted]

No. 1 ORIGINAL.

In the Supreme Court of the United States

OCTOBER TERM, 1914.

THE STATE OF GEORGIA, *Plaintiff,*

vs.

THE TENNESSEE COPPER COMPANY AND THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LTD., *Defendants.*

IN EQUITY.

Supplemental Matter and Exhibits Submitted Upon Leave Granted at the Hearing on Behalf Ducktown Copper Company.

To the Honorable Court:

There is shown below, Exhibit No. 1 to the witness Lamoreaux's deposition (Vol. 2, p. 805-6) setting forth tonnage of ores smelted by the Ducktown Company each year from 1907 to 1913, inclusive. The company has four mines, only two of which (the Mary and East Tennessee) were operated during the entire period. This Exhibit also shows total sulphur content of the ores by years, the total sulphuric acid yield since the acid plant began operations in June, 1909; likewise the yield of copper matte. This company does not refine its matte, and thereby expel all the sulphur, as does the Tennessee Copper Company. It sells the matte to a refinery in New Jersey.

Exhibit No. 1 to Testimony of W. F. Lamoreaux.
(Vol. 2, p. 805-6.)

MARY MINE ORE.

YEAR	TONS OF ORE	PERCENTAGE OF SULPHUR	TONS OF SULPHUR
1907	181,473.4	18.87%	34,244.03
1908	142,234.8	17.90%	25,460.03
1909	139,549.7	16.89%	23,569.94
1910	118,558.25	16.55%	19,621.39
1911	122,873.1	16.84%	20,691.83
1912	162,696.2	17.87%	29,073.81
1913	126,074.9	20.86%	26,299.22

CALLOWAY MINE ORE.

YEAR	TONS OF ORE	PERCENTAGE OF SULPHUR	TONS OF SULPHUR
1907	714.0	13.21%	94.32

EAST TENNESSEE ORE.

YEAR	TONS OF ORE	PERCENTAGE OF SULPHUR	TONS OF SULPHUR
1907	670.4	12.00%	80.45
1908	551.3	12.00%	66.16
1909	2,010.9	12.00%	241.31
1910	5,165.2	13.13%	678.19
1911	20,634.8	10.36%	2,137.76
1912	14,157.6	12.86%	1,820.67
1913	21.563.0	9.32%	2,009.67

ISABELLA MINE ORE.

YEAR	TONS OF ORE	PERCENTAGE OF SULPHUR	TONS OF SULPHUR
1910	4,885.9	29.45%	1,438.90
1911	1,850.7	30.20%	558.91
1912	5,271.4	29.90%	1,576.15
1913	4,611.5	31.97%	1,474.30

MATTE SHIPPED.

YEAR	POUNDS OF MATTE	PERCENTAGE OF SULPHUR	TONS OF SULPHUR
1907	13,433,156	22.85%	1,534.74
1908	10,000,127	22.67%	1,133.51
1909	10,167,245	22.43%	1,140.26
1910	9,193,545	22.91%	1,053.12
1911	10,476,119	22.32%	1,169.13
1912	11,029,575	22.20%	1,225.39
1913	12,537,045	22.13%	1,387.22

60° Be′ ACID SHIPPED.

YEAR	TONS OF ACID	PERCENTAGE OF SULPHUR	TONS OF SULPHUR
1909	12,975.90	25.4%	3,295.87
1910	47,473.53	25.4%	12,058.27
1911	45,626.03	25.4%	11,589.01
1912	48,126.40	25.4%	12,224.11
1913	48,852.05	25.4%	12,408.42

Note: The above Exhibit does *not* show the sulphur content in the slag, flue dust and sulphur flowers, all of which, all witnesses agree, is eliminated or precipitated immediately at the plant. Nor does it take into account the "escapes" of sulphur dioxide around the smelters.

But approximate correctness of each year is shown by comparing it with 1913, which Mr. Lamoreaux analyzed thus:

Mary Mine yield of sulphur was	26,299.22	tons
Add to this from East Tennessee ore	2,009.67	"
Further add Isabella yield	1,474.30	"
Total sulphur eliminated	29,783.19	"

The distribution of this total sulphur is shown best by literal quotation from Mr. Lamoreaux' testimony explaining this Exhibit (Vol. 2, p. 813).

> "For example, suppose we take 1913; there was contained in the ores treated 29,783.19 tons of sulphur. Now, of that sulphur content in the ore 1,387.22 tons went into the matte which was shipped away; 12,408.42 tons of sulphur went into the sulphuric acid which was shipped away; 2,536.3 tons of sulphur was contained in the slag which was thrown away; and 348.7 tons of sulphur was carried out of the furnaces in the form of flue dust. The sum total being 16,680.64 tons of sulphur accounted for
>
> "Q. 51. How much sulphur was accounted for?
>
> "A. 16,680.64 tons.
>
> "Q. 52. How much sulphur did that leave that was not accounted for?

"A. 13,102.55 tons.

"Q. 53. As compared with 16,680.64 tons?

"A. There were 16,680.64 tons accounted for, and there were 29,783.19 tons in the original ore.

"Q. 54. Then you saved, according to those figures, something over half the sulphur?

"A. Yes, sir."

As we recall, General Drake stated in argument that less than 50% of sulphur was reclaimable, according to the most approved processes; and that the contracts between the State of Georgia and the Tennessee Copper Company were negotiated on that basis.

The Lamoreaux Exhibit above is for years, but in fact during the growing months the tonnage of ores smelted and sulphur eliminated is much smaller than during the winter months, in an effort to avoid all possibility of injury to vegetation and crops, either in Tennessee or Georgia. (Vol. 2, p. 817).

In response to the suggestion that all the original books pertaining to the years in question, and of which the Lamoreaux Exhibit is a summary, should have been filled and sent up, the following extract is quoted:

"Mr. Miller: I will state that, as I understand, the State Chemist of the State of Georgia is here present, Mr. Stallings. I never met him until today. I am told he is a man of strict integrity, and I now invite him and General Drake, and any one else who wishes to see the books, to go to Copperhill and there see them as long, and go through them as long, as you may desire—but it is utterly impossible to load all those books in a car, for years past, and bring them down here. You are perfectly welcome to look through them; I understand Georgia representatives

have looked through them repeatedly, and I extend a most hearty invitation to you to go again.

"Mr. Drake: I would be glad to do that and no doubt the State Chemist of Georgia would be glad to do the same, but on account of the limited time at our disposal we cannot; therefore, we would like to have the books present.

"Q. 95. I understand the Chemist of the State of Georgia, and other agents, have had access to the books and have been shown through them on their visits to Ducktown?

"A. They have on two or three visits there been offered every facility; we allowed them every opportunity to view the works and inspect our books and records, and we will only be too glad to have them do so.

"Q. 96. Did any representative of the State of Georgia—were they ever refused any information asked for?

"A. No, sir; to my knowledge, never. It has been the policy of Mr. Renwick to offer them every advantage and any information which they might wish or require.

"Q. 97. You hold yourself ready to do that at any and all times?

"A. I do; yes, sir; those are my instructions.

"Q. 98. I will ask you to state if you have brought with you here, from the books as recorded in the usual course of business, the tonnages of ore smelted and the sulphur content—commencing with 1907 down to date?

"A. I have such figures obtained personally, before leaving Isabella." (Vol. 2, p. 805).

"Mr. Drake: I except to each question for the reason I have stated before that the books are the best evidence."

Exception overruled and appeal taken.

"Q. 99. Have you prepared a synopsis showing the tonnage of ores smelted by years, from 1907, the percentage of sulphur and the total yield of sulphur since coming to Chattanooga?

"A. I have.

"Q. 100. I will get you to file that as Exhibit No. 1 to your testimony?

"A. I do so."

"Mr. Drake: We except to that because the books are the best evidence."

Exception overruled and appeal taken. (Vol. 2, p. 805-6).

Note: Mr. Stallings, the Georgia State Chemist, referred to above as present at the hearings, was not called as a witness. Dr. McCandless, former State Chemist, who had repeatedly visited the plant and inspected the company's books, testified:

"Q. 30. You speak of the books having been submitted to you. I will ask you to state if they appeared to be regularly and accurately kept in the ordinary course of business?

"A. Yes, sir.

"Q. 31. On the occasion of your visit to this company's office as a representative of the State of Georgia, or in any capacity, I will ask you if there was the slightest hesitation to give you the information for which you asked, or any disposition on their part to conceal anything?

"A. No, sir; no, sir.

"Q. 32. All means of information were offered you and your parties?

"A. Yes, sir." (Vol. 2, p. 839).

Mr. W. M. Bowron, commissioned by Governor Brown, of Georgia, as an expert to examine the Ducktown Company's plant (Vol. 2, p. 771) exhibited and testified to the correctness of his report to the Governor (filed as Exhibit A to his affidavit October Term, 1913), in which report he deals with the output of the company by years from 1901, and recites:

> "These details have been kindly furnished me by Mr. C. W. Renwick, resident manager . . . . . I went unannounced and from the top of the hill overlooking the plant . . . . . In other words as the smelter records show, they cut down their output to about what they could take care of in the way of sulphurous acid fumes or smoke. They have a well built acid plant working perfectly when I went over it and took care of the sulphur dioxide as formed." (Ib., p. 45-6).

It thus appears from the undisputed evidence that as compared with 1907, the result as to sulphur elimination, reclamation, conversion, etc., is: In 1907, 34,418.80 tons of sulphur was eliminated, and barring the content of the matte, slag, flue dust and sulphur flowers, the whole thereof was expelled from the present smelter stack. In 1913, but 13,102.55 tons could possibly have been expelled, as all the remainder was definitely accounted for, (Vol. 2, p. 813), or a difference of 21,316.25 tons. This recovery of much more than 50% of the sulphur content has been accomplished only after immense expenditures and application of most approved methods and machinery in an endeavor to comply with the former ruling of this Court. (Vol. 2, p. 796-7).

The Ducktown Company began smelting in 1891, (Vol. 1, p. 556), and the Tennessee Copper Company began ten years later, that is in 1901. (Vol. 1, p. 559; Vol. 2, p. 626).

From the beginning, the output, smelter stack and quality of ores treated by the Ducktown Company were practically the same—yet up to the advent of the Tennessee Copper Company in 1901-2, there was no damage within the State of Georgia. This is emphasized by the hundreds of affidavits filed with "Argument and Exhibits on Application for Restraining Order" by plaintiff at the October Term, 1905. By actual count of affidavits thus submitted, *eight hundred and nineteen* (819), contain the stock phrase, or its equivalent:

> "During the *past two or three years* great quantities of timber has been killed within the locality in which deponent resides."

Note: We have been able to procure but one copy of the affidavits then exhibited, and they are herewith transmitted as a part of the Volume, entitled "Argument and Exhibits on Application for Restraining Order" filed by counsel for plaintiff at the 1905 Term. Many of the affidavits contain in words or substance, the following:

> "The smoke fumes and gases causing the damage are originated by the Ducktown Sulphur, Copper & Iron Company and the Tennessee Copper Company, the latter, however, being located much nearer the Georgia line and producing by far the largest amount of copper, causes the larger part of the injury." (Ib. 170).

Especial reference is made to the operations of the Tennessee Copper Company effecting Georgia territory, in the report of the Commission of August 30th, 1905, to the Governor urging him request the Attorney General "immediately begin proper legal proceedings to abate said nuisance", which commission consisted of the Commissioner of Agriculture, the State Geologist, Dr. John M.

McCandless, State Chemist, J. R. Chastain and Will H. Shippen, President of Shippen Brothers' Lumber Company. (Ib. 171-5).

Frank E. Shippen, Vice-President of the Shippen Brothers Company, gave an affidavit in November, 1905, wherein he stated:

> "Up to about three years ago the forests owned by said company were apparently healthy and the trees normal, but during the latter part of 1902 and the beginning of 1903 an unhealthy condition was becoming apparent in certain localities near the Ducktown territory and along the water courses radiating therefrom." (Ib. 224).

Will H. Shippen made an affidavit in April, 1906, from which the following extracts are taken:

> "The first time deponent's attention was called to the damage being done to the fruit in these counties by these fumes was some two years ago in deponent's orchard at Ellijay. . . . .
>
> "When deponent first came in contact with said forests and timber in said county some eight years ago they were healthy and thrifty as could be found anywhere, while at present in many parts of said county conditions are the very reverse, etc. . . . .
>
> "I had never noticed the presence of these fumes in the country much before the last two or three years, and there was not much timber or vegetation killed in the forests except from usual and natural causes, but since this gas has made its appearance here great quantities of timber have died. . . . .
>
> "This destruction is fast spreading and reaching further and further into the territory of this State and if the amount of sulphur as now smelted is trebled by blowing in four new furnaces that the Tennessee Copper Company have blown in lately

and are to blow in, the damage will be multiplied in the same ratio. . . . .

"If all these fumes are to be concentrated in a stack 325 feet high and three times more ore treated as heretofore, it is only a matter of a short time until the forests and vegetation in these counties is practically ruined and destroyed. . . . .

"This deponent knows that the damage and the principal destruction to the timber and farming interests of this State has been brought about and accomplished largely in the last two or three years and doubly so in Gilmer County during and since last summer.

"Deponent knows that since the adoption of the new process by the Tennessee Copper Company in the early summer of last year that the presence and strength of the sulphur fumes has been much more marked and the destruction of timber and vegetation more than doubled throughout this territory. . . . .

"This deponent is of the opinion that the 325-foot stack of the Tennessee Copper Company will in no wise relieve the situation, and on the contrary will only increase the destruction of timber in the territory of this State." (Ib. 270-281).

The above are the same witnesses, Frank E. Shippen and Will H Shippen, to whom attention is called in our brief, pages 109 to 121.

The Ducktown Company, during the old days of open heap roasting, expelled a goodly portion of sulphur dioxide from the top of the same stack it has ever since continued to use. (Vol. 1, p. 559; Vol. 2, p. 798). It formerly operated two furnaces, while now it operates but one in the growing season. (Vol. 2, p. 627).

The Tennesse Company from 1901-2 operated with a 150-foot stack, and in 1906 blew in its 325-foot stack, (Vol. 2,

p. 627), and *at that time* practically all of the witnesses agree the chief damage south of the Georgia line began.

Note: Of the "thousands" of affidavits secured by the witness, Shippen, in support of complainant's contention, by actual count *eleven hundred and eleven* (1111) filed at the October Term, 1906, contain, in words or substance, the following stock statement:

> "Within the past two or three years the furnaces of defendants have been smelting enormous amounts of sulphurous copper ore. . . . .
>
> "Particularly has this been the case during the spring and summer of this year, while heretofore, viz., prior to May, 1906, these fumes were rarely ever noticed in deponent's neighborhood except late at night and early in the morning, but since this time these fumes have been present at times at all hours of the day and night whenever the wind was from the direction of the defendants' mines. . . . .
>
> "Since the above spring and summer the fumes seem to have been given an increased carrying power and seem to have been condensed and concentrated and made far more deadly. They seem to have mounted into higher altitudes and be able to pass barriers of mountains and hills that hitherto seemed to protect certain sections where no damage had heretofore appeared. . . . .
>
> "The destruction to timber, crops and orchards has been far greater during the spring and summer of 1906, and the territory so destroyed vastly widened and increased from anything ever before known. Each deponent knows of his own knowledge that since May of this year the destruction of timber and vegetation has been multiplied many times over anything ever before experienced, and such destruction has been wrought and accomplished in much

less time." (See "Supplemental Evidence and Exhibits on Application for Restraining Order" filed by Plaintiff October Term, 1906, pages 1 to 3).

Note: There is but one copy of this supplemental evidence, so far as we know, and it is submitted herewith. After the first 70 pages the 1,111 affidavits to which we call attention as above immediately commence. Hence the exhibits above should appear at pages 71-3, but as the supplement is in fact paged, they are numbered pages 1, 2 and 3, immediately following page 70.

The aforesaid witness, Frank Shippen, in September, 1906, made an affidavit, reciting:

> "The settling of this mist or vapor is not a thing which occasionally occurs during the year, but has within the past two or three years been a matter of repeated occurrence. This vapor has been generally noticed by citizens and residents and has caused extensive comment.
>
> "Particularly has this been the case during the spring and summer of this year, while heretofore, to-wit: prior to May, 1906, these fumes were rarely ever noticed in deponent's neighborhood except late at night and early in the morning," etc. (Ib., p. 35).

Aside from the statements of the 1,111 deponents for Plaintiff showing that the damage began in the spring of 1906 with the blowing in of the Tennessee Copper Company's tall stack, all of which are found in the Supplemental Evidence and Exhibits filed by Plaintiff at the October Term, 1906, the following are a few extracts from the many affidavits therein appearing directly attributing the injury complained of to the installation of the high stack:

> "The erection of the high stack by the defendant Tennessee Copper Company has increased the carrying power of said fumes, and while it has, to some

extent, relieved the situation in and around the immediate vicinity of said furnaces, it has very much aggravated the condition of things for many miles further away, which has produced great damage to timber and destruction of crops in territory not heretofore injuriously affected." (Ib., p. 174).

"Greater damage has been wrought to farming lands, timber, orchards, crops and gardens during the past spring and summer (1906) than ever accomplished in any three years previous—in fact, more damage per month was apparent for the months of June, July and August, 1906, than was noticeable per year prior to this time." (Ib., p. 204-5).

"Since the erection of the high stack this spring by the Tennessee Copper Company the destruction of all vegetation and crops, fruit, and farming, has been multiplied many times more than ever before." (Ib., p. 273).

"The erection of the high stack by the Tennessee Copper Company at McCay, Tennessee, has very greatly extended the territory formerly affected by smoke and fumes from defendants' furnaces." (Ib., p. 309).

"The erection of the high stack by the Tennessee Copper Company this year has greatly aggravated the situation. The smoke and fumes are present more often and in much greater volume and strength than ever before." (Ib., p. 315).

"The damage done to timber and vegetation in deponent's section of the county has been very greatly increased since the erection of the high stack by the Tennessee Copper Company." (Ib., 330).

"Since the erection of the high stack by the Tennessee Copper Company the territory heretofore in-

juriously affected by said fumes from said plant has been very greatly extended." (Ib., p. 345).

"The damage in deponent's community this year is two or three times greater than that done in the last two or three years previously. The erection of the high stack by the Tennessee Copper Company has only served to give the fumes greater carrying power." (Ib., 354).

At first it was supposed that the tall stack would remedy conditions. A stipulation to discontinue or postpone was filed for this reason. When conditions were not remedied, but materially aggravated, as result of the Tennessee Copper Company's tall stack, which it yet operates, plaintiff's application was renewed and the decision of 1907 was herein rendered. Shortly thereafter the Shippen's "arranged" with the Tennessee Company whereby for $50,00.00 paid to the Shippen Company, and $234,000.00 additional paid to the two Shippens for certain of their stock, that they, the Shippens, would aid the Tennessee Company to continue its operations which they, and others inspired by them, had complained of so bitterly. (See pages 109 to 121, inclusive, our brief).

The Shippens tried to bargain with the Ducktown Company, claiming "the Courts in Tennessee will not give anybody justice" (Vol. 1, p. 335). The Ducktown Company declined to engage them, or treat with them at any price. Thereupon the citizenship of North Georgia was again stirred up by them, and a subsequent legislative resolution passed whereby the Ducktown Company was to be proceeded against here—in default of its refusal to put up $25,000.00 for three years to be parceled out by a "commission" to the land owners in the territory embracing the Shippen lands. Its co-defendant of record here, its keen business competitor at all times, has since 1908 been the largest stockholder in the Shippen Brothers Lumber Company. Thus its competitor and its co-defendant of record is to share directly in all moneys the Ducktown Company

was asked to pay the Shippen Company, whether through the instrumentality of a "commission" or otherwise.

At the hearing last spring, counsel for plaintiff was interrogated by a member of this Court, as appears from stenographic transcript, and answered:

> "Mr. Justice Day: Can you distinguish the smoke from one of these institutions from that of the other?
>
> "General Felder: That is what we are trying to do.
>
> "The Court: Where you have a combined nuisance how are you going to hope for a separate final decree?
>
> "General Felder: If your Honor please, I have an authority I can give you where that particular matter has been passed upon with reference to these companies. It is a case reported in 113 Tenn., page 331."

We submit the question then put is apt, that it is not answered in the Tennessee case cited, and has not, and cannot be answered, in accordance with plaintiff's contention. Moreover, the licensing of the Tennessee Company and the recent revelations that plaintiff was really induced to act by the Shippens, constitute materially "changed conditions" as contemplated by the order permitting proof herein, such as warrant an absolute dismissal as to the Ducktown Company.

Respectfully submitted,

W. B. MILLER,

J. A. FOWLER,

Solicitors for Ducktown Sulphur, Copper & Iron Company, Limited.

STATE

STATE OF GEORGIA *v.* TENNESSEE COPPER COMPANY AND DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED.

MOTION TO ENTER A FINAL DECREE AGAINST THE DUCKTOWN SULPHUR, COPPER & IRON COMPANY, LIMITED.

No. 1, Original. Argued April 6, 7, 1915.—Decided May 10, 1915.

The defendant Ducktown Sulphur Copper & Iron Company and the State of Georgia not having agreed as to the method of operation of the furnaces of the former and additional testimony having been taken relating to alleged changed conditions since 1907 and it appearing that the furnaces are emitting fumes in excess of what is proper *held* that:

A final decree against the Ducktown Company be now entered restraining it from operating its plant except upon the terms specified therein; the cause to be retained for further action and either side may present a decree in conformity with this decision.

Final decree ordered in 206 U. S. 230, against defendant Ducktown Company.

THE facts, which involve questions of nuisance arising from fumes from smelting ore and the power of the court to enjoin the same at the instance of a State, are stated in the opinion.

Mr. Warren Grice and *Mr. J. A. Drake*, with whom *Mr. Lamar Hill* was on the brief, for complainant.

Mr. J. A. Fowler and *Mr. W. B. Miller* for defendant Ducktown Company.

MR. JUSTICE MCREYNOLDS delivered the opinion of the court.

Both defendants are smelting copper ores in Polk County, East Tennessee, near the Georgia line. The works of the Tennessee Company, much the larger of the two, are situated within half a mile of the line; those of the Ducktown Company are some two and one-half miles away. The ores contain a very large amount of sulphur—around 20%—and in the process of smelting great quantities of sulphur dioxide are formed; if allowed to escape into the air this becomes sulphurous acid, a poisonous gas destructive of plant life.

In October, 1905, the State of Georgia began this Original proceeding alleging that defendants permitted discharge from their works of noxious gases which being carried by air currents ultimately settled upon its territory and destroyed the vegetation, and asking for appropriate relief. The case was heard on the merits and the issues determined in complainant's favor, May, 1907. We then said: "If the State of Georgia adheres to its determination, there is no alternative to issuing an injunction, after allowing a reasonable time to the defendants to complete the structures that they now are building, and the efforts that they are making, to stop the fumes. The plaintiff may submit a form of decree on the coming in of this court in October next." 206 U. S. 230, 239.

Hope was entertained that some practical method of subduing the noxious fumes could be devised and by consent the time for entering a final decree was enlarged. Both companies installed purifying devices. The Tennessee Company and the State finally entered into a stipula-

tion whereby the former undertook annually to supply a fund to compensate those injured by fumes from its works, to conduct its plant subject to inspection in specified ways, and between April 10th and October 1st not to "operate more green ore furnaces than it finds necessary to permit of operating its sulphuric acid plant at its normal full capacity." The State agreed to refrain from asking an injunction prior to October, 1916, if the stipulation was fully observed. The Ducktown Company and the State were unable to agree, and in February, 1914, the latter moved for a decree according a perpetual injunction. Consideration of the matter was postponed upon representation that conditions had materially changed since 1907, and leave was granted to present additional testimony "to relate solely to the changed conditions, if any, which may have arisen since the case was here decided." A mass of conflicting evidence has been submitted for our consideration.

The Ducktown Company has spent large sums—$600,000 and more—since the former opinion in constructing purifying works (acid plant); and a much smaller proportion of the sulphur contained in the ores now escapes into the air as sulphur dioxide—possibly only 41½% as against 85½% under former conditions. Similar improvements have been installed by the Tennessee Company at great expense, but we are without adequate information concerning the effect produced by them. As it asked and was granted opportunity to show material changes the burden is upon the Ducktown Company. A full and complete disclosure of the improvements installed by it and the results continuously obtained has not been presented.

Counsel maintain that escaping sulphur fumes now produce no substantial damage in Georgia, and further that if any such damage is being done the Tennessee Company alone is responsible therefor. We think the

proof fails to support either branch of the defense, and the State should have a decree adequate to diminish materially the present probability of damage to its citizens.

The evidence does not disclose with accuracy the volume or true character of the fumes which are being given off daily from the works of either company. Averages may not be relied on with confidence since improper operations for a single week or day might destroy vegetation over a large area, while the emission of great quantities of fumes during a short period would affect but slightly the average for a month or year.

It appears that in 1913 the total ores smelted by the Ducktown Company amounted to 152,249 tons, or 304,498,000 pounds—20% sulphur; total matte shipped was 12,537,000 pounds—about 4% of the ore; the total sulphur in the smelted ores not accounted for and which escaped into the air in the form of sulphur dioxide was 13,102 tons, or 26,204,000 pounds—over two pounds of sulphur for each pound of matte and an average of more than 35 tons per day.

During July, 1913, the total matte shipped (approximately the production) was 846,000 pounds—more was shipped in June and less in August. The July production was thus approximately 7% of the year's total. The sulphur in the fumes generated in connection with the production for this month, not redeemed by the acid plant and emitted into the air, may be fairly estimated as not less than 7% of 13,102 or 917 tons—substantially 30 tons per day. This amount produced harmful results and must be diminished.

It is impossible from the record to ascertain with certainty the reduction in the sulphur content of emitted gases necessary to render the territory of Georgia immune from injury therefrom; but adequate relief, we are disposed to think, will follow a decree restraining the Duck-

town Company from continuing to operate its plant otherwise than upon the terms and conditions following: (1) It shall keep daily records showing fully and in detail the course and result of the operations. (2) A competent inspector to be appointed by this court shall have access to all the books and records of the Company, shall make frequent careful observations of the conditions—at least once each fortnight—during the next six months, and at the end of that time shall make full report with appropriate recommendations. An adequate sum to cover the necessary costs and expenses must be deposited with the Clerk by the Company. (3) It shall not permit the escape into the air of fumes carrying more than 45% of the sulphur contained in the green ore subjected to smelting. (4) It shall not permit escape into the air of gases the total sulphur content of which shall exceed 20 tons during one day from April 10th to October 1st of each year or exceed 40 tons in one day during any other season.

The cause will be retained for further action and either party may apply hereafter for appropriate relief.

Within ten days either side may present a decree in conformity herewith, together with such suggestions as seem desirable.

MR. JUSTICE HUGHES, dissenting: I do not think that the evidence justifies the decree limiting production as stated.

THE CHIEF JUSTICE and MR. JUSTICE HOLMES join in this dissent.

See page 678, *post*, for decree entered in conformity with this opinion.